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SIERRA CLUB BULLETIN

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CONTENTS

THE OBSERVATORY ON MT. WHITNEY. <i>Alexander McAdie</i>	141
Plates XXXIV., XXXV., XXXVI., XXXVII., XXXVIII., XXXIX., XL.	
THE GRAND CIRCUIT OF THE YOSEMITE NATIONAL PARK <i>Lucy Ashburn</i>	149
Plates XLI., XLII., XLIII., XLIV.	
DOWN TENAYA CAÑON <i>S. L. Foster</i>	153
Plates XLV., XLVI., XLVII.	
ON MT. ST. HELENS WITH THE MAZAMAS <i>Marion Randall Parsons</i>	170
Plates XLVIII., XLIX.	
A HIGH SIERRA CIRCUIT ON HEADWATERS OF KING'S RIVER <i>Wm. Conger Morgan</i>	180
Plates L., LI., LII., LIII., LIV., LV.	
REPORTS:	
Report of Outing Committee, 1909 Outing	189
The New Paradise Trail	190
Report of the Le Conte Memorial Lodge Committee	191
NOTES AND CORRESPONDENCE	194
Plates LVI., LVII.	
FORESTRY NOTES	206
BOOK REVIEWS	209

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LOOKING NORTHWEST FROM MOUNT WHITNEY.

From photograph by Dr. W. W. Campbell.



THE OBSERVATORY ON MOUNT WHITNEY, 14,502 FEET.

From photograph by Dr. W. W. Campbell, 1909.

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THE OBSERVATORY ON MOUNT WHITNEY*

BY ALEXANDER MCADIE.

The mention of Mount Whitney, culminating point of the Sierra and highest spot in the United States, excluding Alaska, brings before the minds of most of us a series of mental pictures connected with the discovery and general history of the peak. The mountain was first seen from Mount Brewer by members of the Geological Survey of California in 1864 and was named after the distinguished head of the Survey. It was first climbed, as far as can be ascertained, on August 18, 1873, by Lucas, Bigole, and Johnson, and ingloriously named Fisherman's Peak. Clarence King had climbed what he supposed was Whitney in 1871; but in reality the peak now known as Sheep Mountain† (shown in the photograph) lying to the south, also known as Old Mount Whitney and Mount Corcoran. While in New York on September 1, 1873, he learned of his mistake, and, hastening west, climbed the right peak, September 19, 1873. On September 6th of the same year Carl Rabe climbed the peak, carrying to the summit a mountain mercurial barometer,—Green, No. 1554,—and made the first determination of the mountain's height. This particular barometer was again car-

* The use of Whitney and other peaks in the Sierra as sites for observatories was advocated in the following papers published in the SIERRA CLUB BULLETIN: "Mount Whitney as a Site for Meteorological Observatory," No. 31, Vol. V, pages 87 to 101, McAdie; "Mount Rainier, Mount Shasta, and Mount Whitney as Sites for Meteorological Observatories," No. 34, Vol. VI, pages 7-14, McAdie.

† Name changed in 1905 to Mount Langley.

ried to the summit by McAdie and Le Conte with other instruments on July 8, 1903.*

In July, 1881, Professor Langley's party went into camp near what is now known as Langley's Lakes. The expedition entered the region by way of Lone Pine, crossing the divide south of the summit and camping at an elevation of approximately 12,000 feet. The importance of the observations then made has not been fully understood nor appreciated even by scientific workers. To the people at large comparatively little has been made known. In the coming years, as the various problems of solar and stellar atmospheres press for solution, a truer appreciation of Langley's high-order work in connection with the solar constant and the absorption of energy by the earth's atmosphere will be had. Not the least in his long line of honors, it seems to me, is the credit due him for farsightedness and sagacity in selecting the site, suitable for work, and the attempt to demonstrate the truth of his belief.

Of the last scientific expedition to the summit, the Campbell-Abbot party of August-September, 1909, more will be said further on in this paper; but it is of more than passing significance that from the vantage ground of Whitney should come the first authoritative knowledge of the probable amount of water vapor and oxygen in the atmosphere of our neighboring planet, Mars.

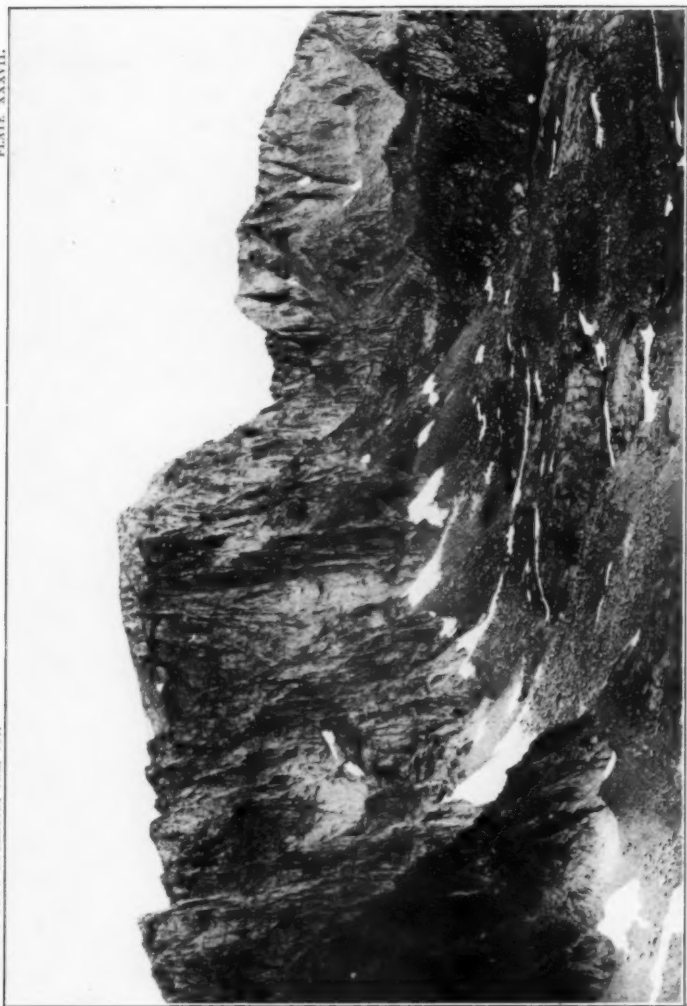
So far as the writer knows the first men to spend a night on the summit of Mount Whitney were Michaelis, Nanry and Keeler, of Professor Langley's party.† Observations of temperature and vapor pressure were made at intervals September 2d to 5th, 1881. Twenty-eight years afterwards, August 28th to September 4th, 1909, *continuous* records were obtained of pressure, humidity and temperature for the entire period by McAdie while a member of the Campbell-Abbot party.

* Members of the Sierra Club will be interested to know that the height published in SIERRA CLUB BULLETIN as the outcome of this measurement (14,515 feet) was within thirteen feet of the true height, determined two years later by precise leveling methods of the United States Geological Survey.

† John Muir was among the first to climb Mount Whitney and spend a night on the summit.



THE SUMMIT OF MOUNT WHITNEY, 14,502 FEET.
From photograph by Dr. W. W. Campbell.



EASTERN FACE OF MOUNT WHITNEY FROM LONE PINE TRAIL.
From photograph by U. S. Department of Agriculture.

The object of the 1909 expedition was twofold: first, to continue Langley's work and redetermine the value of the solar constant; second, to study the absorption lines due to water vapor and oxygen in the atmospheres of Mars and the Moon. The main party left Lone Pine with Mr. W. L. Skinner as guide August 23d, and camped for two nights and three days at a height of 10,300 feet. Dr. Abbot preceded the party several days. Mr. G. F. Marsh of Lone Pine had been on the summit since July 8th, superintending the erection of the observatory. Of Marsh I think I voice the sentiment of the entire party that he was a host in himself. To him more than to any other one man is due the successful completion of the trail and the building of the observatory. One instance of his devotion was deeply appreciated by all of us at the time and we are not willing now to pass it by in silence. The night before the arrival of the main party a violent thunder-storm swept the summit. The men employed in finishing the building, not without good reason, sought safety below. Marsh remained at his post with Dr. Abbot.

From the very scattered notes in my Journal, under date of August 28th, I gather:

"Reached observatory 1:15 P. M. Abbot and Marsh opened the door. Whole party well soaked. Many peals of thunder with distant lightning; hair on mules' necks bristling. A rather near flash just as we reached the summit. Felt a sharp stinging pain in right temple. At 1:50 P. M. all present and accounted for, with four visitors from Lone Pine. Fourteen animals in our pack-train. Two of the mules, Jack and Lucky, were specially honored because they carried the mirrors safely to the top. These are flat, silver-on-glass mirrors, one about nineteen inches and the other seventeen inches in diameter. If accident had befallen these en route the party would have turned back, for there would have been no way to make spectrograms."

More than once on the way up the Director's heart was in his mouth, as some particular animal, loaded with delicate instruments, would jeopardize his burden. There was

some quiet jesting between the rest of us, concerning the relative value of ourselves and our mute asinine friends. Coming down from the summit a week later one of the mules fell from the trail. We spent more than an hour trying to get him back; but had to abandon him, even after getting him back to the trail. The elevation was 13,700 feet, so recorded by our barograph, which fortunately was on the person of the writer. Two hours later, at an elevation of about 13,000 feet, in crossing one of the snow fields, four mules and a saddle horse, loaded with mirrors, photographic material, hygrograph and thermograph, lost their footing and glissaded the snow fields. It seemed as if the animals must surely be killed and the packs smashed to kindling; but fortunately there were no projecting rocks and the injuries were mostly flesh wounds. Owing to good packing and careful wrapping, the damage was not of much consequence. And we could not repress a certain feeling of exultation that it happened when we were coming down rather than when ascending.

Much has appeared in public prints recently concerning the possibility of life on the planet Mars. Some spectrograms of Mars and the Moon obtained at the Lowell Observatory, near Flagstaff, Arizona, in the winter of 1908, led to the conclusion that there was water vapor present in the atmosphere of Mars. It should, however, be pointed out that these spectrograms were made in January and February, and that so far as can be ascertained in the absence of instrumental records at the place of observation, the air columns contained much water vapor and that there is therefore a valid objection to accepting these, inasmuch as the intensification of the band may be simply due to the presence of the vapor in our own atmosphere. It also appears that the photographs of the planet were made soon after dark, while those of the Moon were taken several hours later and at a drier period of the night. The special purpose of Dr. Campbell's work therefore was to get spectrograms of Mars and the Moon under the most

favorable condition: i. e., when there was a minimum amount of water vapor in the Earth's atmosphere. Mount Whitney seemed to offer an ideal exposure. Here, if anywhere the spectra would be least influenced by the water vapor and oxygen in our own atmosphere. As far back as 1894, when examining the spectrum of Mars at Mount Hamilton for evidence of water vapor, Campbell had realized the need of repeating the work from some level above the water vapor strata. Mount Whitney, altitude 4420 meters (14,502 feet) above sea level, in a region of extreme dryness and accessible at the time, appealed to him as the best suited place. Therefore, when the planet was again near the Earth and high above the horizon, he planned to attempt spectroscopic work from the summit of Whitney. Mr. William H. Crocker generously defrayed the expenses of the party. To make sure of the availability of the site, Campbell and Abbot made a preliminary trip in 1908, and remained one night on the summit, August 24th. As a result of their report Dr. Walcott, Secretary of the Smithsonian Institution, authorized the building of a small observatory and shelter from the Hodgkin's fund. May we not hope that this is the nucleus of a great æro-physical observatory where work shall be done that will both add luster to American science and justify in fullest measure the aim of the Smithsonian Institution in its purpose to diffuse knowledge throughout the world for the welfare of men.

Of the results of the expedition it may be said very briefly that while weather conditions were in the main stormy, there were two excellent nights for the astronomers, with an amount of vapor in the air, only a very small fraction of that present during all previous observations. Six excellent spectrograms of Mars and the Moon were obtained, and Dr. Campbell draws the conclusion on this evidence that while there may be water vapor in Mars, it is exceedingly small in amount. It is indeed doubtful if there is much difference between Mars and the Moon, so far as water vapor and oxygen are con-

cerned. For the observations in detail and an exhaustive discussion of the question, the reader is referred to Lick Observatory Bulletin No. 169, by Dr. W. W. Campbell.

With regard to the weather records obtained, we must hurry over the record, which may some time be published in full elsewhere. The weather was clear from July 8th until August 18th, when there was a thunder-storm with four inches of snow. On August 19th there was another thunder-storm with three inches of snow. Fair weather followed until August 26th, when severe thunder-storms occurred. On August 28th there were hailstorms, snow-storms, thunder-storms at intervals. During every night of our stay, freezing temperatures occurred and on five consecutive nights the temperature fell to 26° F., or even lower. The mid-day temperatures were about 50° F.

We had no instruments for recording the direction and velocity of air movement. One of the most interesting meteorological features of the mountain and indeed of the whole section, is the prevalence of uprising currents. Ultimately we hope there will be proper instrumental means for detecting and recording the flow and counterflow of the air over the peak. There were also marked changes in short intervals in the amount of water vapor present. Our humidity records, which were continuous throughout the week and which we believe to be the first records of such character ever made at an elevation exceeding 10,000 feet, show variations in humidity ranging from 5 per cent to 98 per cent. During mid-day hours the humidity would rise as a rule to above 80 per cent, while between 2 A. M. and 5 A. M. extremely low humidities were recorded, ranging from 3 to 11 per cent.

One other feature remains to be mentioned; that is the electrification of the air. There must have been tremendous potential differences between the cloud masses and the boulders on top of the mountain. But this is only one of many lines of research which ought to be undertaken on the summit of Whitney.



LOOKING NORTH FROM MOUNT WHITNEY, SHOWING MOUNT WILLIAMSON.
From photograph by Dr. W. W. Campbell.



OLD MOUNT WHITNEY (SHEEP MOUNTAIN)—THE LITTLE MOUNTAIN IS MOUNT MEADIE.

From photograph by Dr. W. W. Campbell.

We are under obligations to Dr. Campbell for his unflinching courtesy throughout and his permission to use various photographs; also to the Director of the Smithsonian Institution, Dr. Walcott, for permission to use data and illustrations prepared by Dr. Abbot.

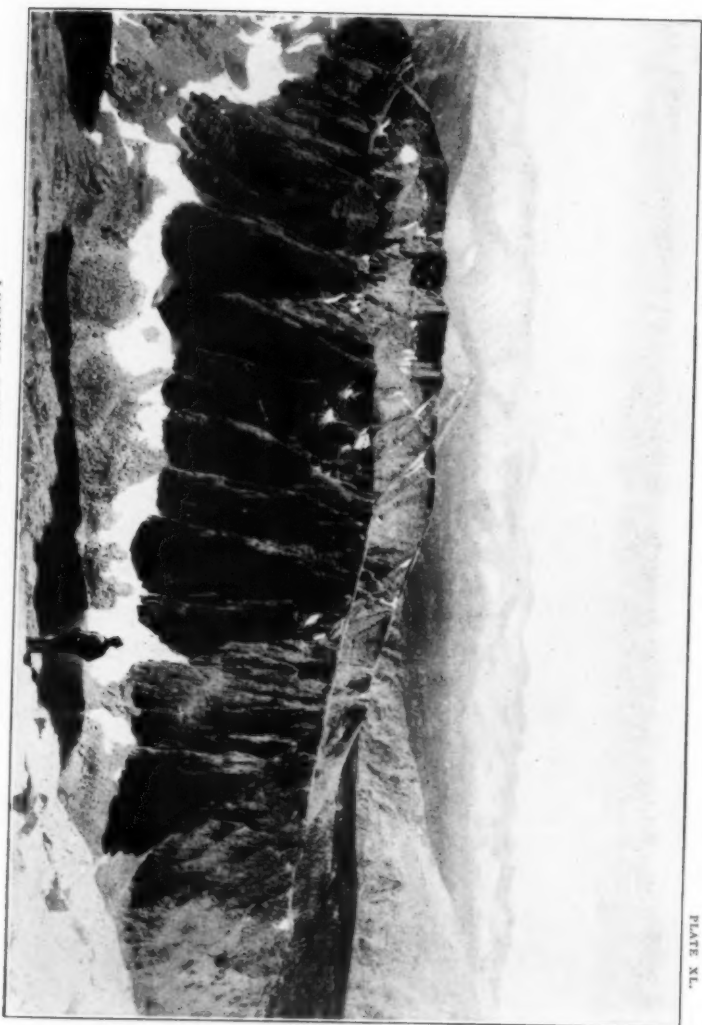
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But there is a side to the story of Whitney other than the purely scientific; and Sierrans, ever lovers of the beautiful, hold dear some memory pictures of men and hours associated with the not unkindly peak. In one of these, two agile mountaineers are toiling in the deep snow, battling hard to gain the summit. Theirs was the first attempt to climb Whitney in winter. For the sake of the adventure and also for the purpose of leaving instruments at the summit whereby a record of minimum temperatures might be obtained, these two risked life and limb. Thus is knowledge gained that wisdom may follow and the welfare of men be promoted. The story of the adventure is graphically told in the journal notes of one of the party.* From March 2d to March 10th, 1905, these two Sierrans were out on the mountain side. We see them in fancy as they stand on the ledge at an elevation of over 13,000 feet, where one mis-step on the treacherous snow would send them over the precipice. Baffled when the prize was within reach, they turn backward facing the far-sweeping snowfields in which they had slept and over which they had plodded day and night.

In the second of these memory pictures there moves a solitary figure, strolling leisurely near the summit as the summer night falls. Neither night nor fear daunt him. Self-reliant and indifferent to what may befall so far from human help, he wanders where his fancy leads, free as the air around him. Unlike the rest of us, he courts not the comforting support of comradeship and takes the unbroken way through pass and over crag. His love of the mountains and that tenderness

* SIERRA CLUB BULLETIN, June, 1909, (Church and Marsh).

for Nature, pure and undefiled, came from Highland forebears. A roamer in many lands, his wistful eyes have searched the hidden places of glade and crevasse in regions unexplored. He has wandered farther and seen more than the men of his generation; but his heart turns ever homeward to the "Mountains of the Light." There fittingly the picture leaves him. In the sombre gloom of the depths around him (for Whitney's sides are steep and sheer), in the deepening shadows, in the sweep of the wind, he finds friendship; communing with old friends, while night with a thousand eyes of splendor watches over all.



LOOKING SOUTHWEST FROM MOUNT WHITNEY.

From photograph by Dr. W. W. Campbell.



LOOKING ACROSS THE LOWER END OF TUOLUMNE MEADOWS, ONE OF THE FINEST CAMP-GROUNDS IN THE WORLD.

From photograph by Herbert W. Gleason, 1909.

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THE GRAND CIRCUIT OF THE YOSEMITE NATIONAL PARK

BY LUCY WASHBURN.

As the American people know little of the value of one of their greatest national parks, those persons who have had the privilege of visiting it owe their fellow-citizens such report as they can give. The want of roads has hitherto kept out the general public, but the Sierra Club of mountain lovers waits not for roads and wagons. With food, minimum clothing, and light down "sleeping-bags," carried on pack animals, the Sierrans tramp freely up and down the mountain trails from camp to camp.

Behold us, then, filing up out of Yosemite Valley past the famous Vernal and Nevada Falls to the upper cañon of Yosemite's river, the Merced, and two or three days later crossing at an altitude of 10,500 feet the pass from the basin of the Merced to that of the Tuolumne. These two parallel river basins and their accompanying heights make up the Yosemite National Park. When our Government shall have built a road over this pass, as is perfectly feasible, and some hostelry shall perch among its beetling snowy crags, the thousands who now see only the Yosemite Valley below it will never fail to see this wild Alpine glory.

Making our way down the northern slope, the grand upper basin of the Tuolumne River was spread before us, many square miles in extent—the bed of an enormous glacier of old, now taken possession of by a wide forest, thinning as it climbs the granite slopes to bare rock and snow. Before sunset we were camped beside the river in the "Tuolumne Meadows," finest of all Sierra camping-grounds, says John Muir, who knows the Sierras best. Here the uniting branches of the glacier had furrowed widest, and succeeding ages of deposit have produced a level floor, over eight thousand feet above the sea. The

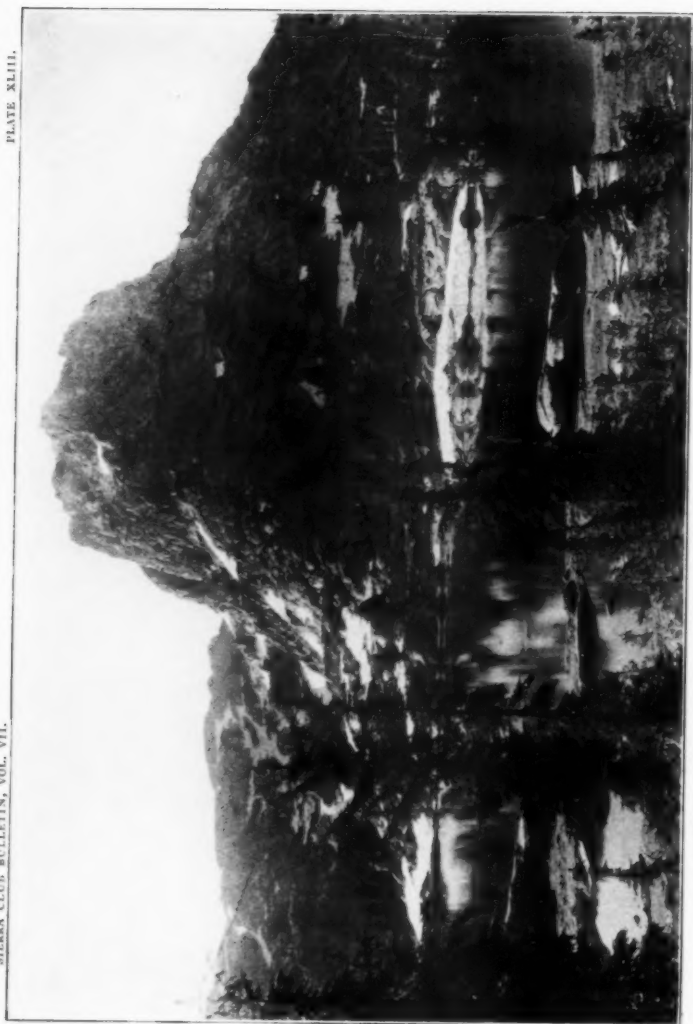
meadow, about the size of Yosemite Valley floor, is not a gorge with precipitous walls, but an open smiling expanse, surrounded by noble mountains, their snowy summits reposing against the clear blue. We look right up to the main crest of the Sierra, the lowest pass in the tremendous line 10,600 feet high, dominated by peak after peak from twelve thousand to over thirteen thousand feet in height. Shutting in the sides of the valley are lesser peaks, snow-tipped, of a striking variety of sculpture, as indicated by their names—Cathedral Peak, Fairview Dome, Unicorn Peak. Through the grove-bordered meadow of soft grasses and flowers winds the noble Tuolumne River, its clear water brimming to the brink, here in smooth full flow, there in dashing rapids. And in the center of all stands forth "Lambert's Dome," a towering granite pyramid. It has one accessible side, by which you climb to the summit, where you sit hour after hour, entranced by the view of this tremendous amphitheater.

Here was our glorious home for a week. The majority of the party made, from this center, the ascent of either Mt. Dana or Mt. Lyell, each requiring a two-days' trip and a hard climb, more than recompensed by views over California and Nevada from these summits of the range. For those who chose the meadow and nearer excursions, the days were all too short. And what nights in this pure upper air! How searching the stars as from our beds on the ground we looked up into the infinite! What a new divine restfulness after this revelation of the everlasting arms around us!

Forty of the strongest and most adventurous of our party, their beds and five days' provisions strapped to their backs, made their way to the Hetch Hetchy down the narrow gorge of the Tuolumne, deep as the Colorado Cañon and slippery with glacier polish. The rest of us were well content to swing around by the trail at several miles' distance from the river. It led us over one divide after another, down into and across the deep valleys of the streams flowing into the Tuolumne. The second



LOOKING UP THE LVELL FORK OF THE TUOLUMNE MEADOWS, YOSEMITE NATIONAL PARK.
From photograph by W. L. Hooper, 1909.



ROGERS LAKE AND REGULATION PEAK, YOSEMITE NATIONAL PARK.

From photograph by Geo. R. King, 1909.

afternoon from the meadows we held our breath when our trail led to the brink of the great Matterhorn Cañon, cut for miles deeper and deeper from the sharp peak fitly named for the famous spire of the Alps. Down the steep cañon sides we picked our way to the night's camp beside the stream, only to climb the opposite wall next day. Winding around this ridge, suddenly we came on a point where the whole vast slope of the Sierra range was in view, from its snowy crest down the bewildering miles of ridges and cañons to the blue haze filling the great central plain of California like a sea.

As that great day drew toward its close, we descended another precipitous trail and our eyes filled with a new picture. The loveliest of glacier lakes lay before us. On one side rose a vast rock, a thousand feet high, shaped like a battlemented castle guarding this mountain fastness, snow in every crevice of its granite wall not too steep to hold it, and snowfields under its shading walls sloping to the crystal lake. On the other, the sunny side, among the sheets of glacier-polished rock that tripped our feet, noble trees had found a foot-hold and delicate flowers grew to the very brink. As the sunset tints flooded sky and lake and touched the snowy granite cliff with the rosy tender alpine-glow, all tongues were hushed, all hearts thrilled with the heavenly scene. Then came the stars, which from our pillows among the hollows of the rocks we watched making long trails of splendor in the wonderful, quivering mirror of crystal water. Fain would we have lingered in this abode of the spirit, but we could only wake with the dawn, not to miss the sunrise that again flushed its pure cold gray and white and crystal into living loveliness, like Pygmalion's statue receiving its soul.

That day's travel brought us to another deep tributary cañon, from whose brow we saw the mighty sweep of the great Tuolumne Cañon itself, deep in whose hidden gorge we knew that the most adventurous of our party were working their strenuous way.

These overwhelming views might have weighed upon us but for the daily and nightly companionship of the friendly trees of the Sierra forest, pronounced by the two best judges—the renowned and world-experienced botanists, Asa Gray and Sir Joseph Hooker—to be the finest coniferous forest in the world, both as to the grandeur of individual trees and the variety of species. What a joy to become better acquainted with them, each on its chosen level—the delicate hemlock, the rugged juniper, the plummy Douglas spruce, the vivid incense cedar, the silver firs, red and white, so exquisite in youth, so majestic in age, and all the family of pines, among them the democratic tamarack, the massive columnar ponderosa, the towering sugar-pine, most impressive of all in its masterful individuality—until at last the Sequoia rose on our sight, ruling over the whole lordly forest in serene majesty.

But before we came to the Sequoia we had had our second long camp in the Hetch Hetchy Valley. Vivid in my mind is my first view as I looked down into it from its upper end,—the granite walls on each side rising to a height of two thousand feet, the bold cliff “Kolana” standing forth toward the center dominating all, the park-like floor, diversified with meadow and grove, the beautiful Tuolumne River flowing through as the Merced flows through Yosemite Valley. Once in the valley, past a charming five-sprayed waterfall of the stream that opened a way for us, we looked up to see Wapama Fall in its pure white clinging to the north wall for sixteen hundred feet, reminding us of the Yosemite in situation and volume, though not flung free like that peerless fall of all the world. Beside the Wapama Fall, over that same wall, in early summer a thousand-foot single leap is made by the delicate Tueeulala Fall, fairer even than the Yosemite Bridal Veil. Grand and beautiful by day, imagine the spell of this grand cañon valley by moonlight!

With the perfectly feasible roads that our Government should build in this National park, as it has in the Yellowstone, uncounted multitudes to come will make the grand circuit of the whole.



Tweenhla Fall

Hetch Hetchy El Capitan
HETCH HETCHY VALLEY, YOSEMITE NATIONAL PARK.
From photograph by Herbert W. Gleason.

Wapama Fall



LOOKING UP TENAYA CAÑON FROM GLACIER POINT, YOSEMITE VALLEY.

From photograph by J. N. Le Conte.

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DOWN TENAYA CAÑON

BY S. L. FOSTER.

When vacation time came around this year the call of the Sierras led the writer off for another trip among their charms and delights. This time the trail went up from Yosemite Valley through the forests, the snow plants, the Mariposa tulips, and the little Alpine lilies of Indian Cañon, through the mountain gardens and lingering snows of Snow Flat, May Lake and the flanks of Mount Hoffman to the top of this peak near the center of the great Yosemite National Park and overlooking almost the whole of it, returning to the valley down the Tenaya Cañon via Tenaya Lake.

In response to a preliminary letter of inquiry a Yosemite Valley guide stated that there was a "straight, impassable wall a thousand or fifteen hundred feet high" in Tenaya Cañon. He also reported trout in the creek. The first bit of information was optimistically discounted and the second gladly received. A search through the files of the SIERRA CLUB BULLETIN revealed an article published in February, 1901, entitled "The Descent of the Tenaya Cañon," by George Gibbs.

This article states that Mr. Muir is reported to have made this trip and that Mr. Galen Clark, the Guardian of the Valley in 1894, reported it made by two other men. When the author reached Yosemite Valley at the beginning of the trip he gained little information about Tenaya Cañon, except that three men with one hundred and fifty feet of rope had made the trip down some years ago and that two Indians had started to make the trip up. From these facts it was decided that the trip was feasible and safe. Ten men had made the trip, and no fatalities had been reported. Further, it seemed clear that there must be a practicable trail down the cañon, as the deer and bears come down and they do not carry ropes.

The 1901 article spoke of three chief obstacles: (1) A "frightfully steep" precipice (the 1500-foot straight wall of the guide), where the men spent three hard hours descending the vertical wall of the gorge with the indispensable help of their fifty feet of rope. (2) "The Final Jumping-off Place," where, at an otherwise absolutely hopeless defile in the cañon, after much search they found a narrow ledge passage at the beginning with an overhanging granite shelf a few feet above, obliging them to go on hands and knees along the face of the gorge far above the hungry rocks of the stream bed, and tapering finally to half the width of a shoe and forty feet long in the almost sheer vertical wall of the chasm. (3) A seventy-foot fall that they only passed by jumping into the limbs of a tall nearby pine tree, and after swinging in the air fifty feet from the ground, climbing hand over hand up the limb to the trunk of the tree and thence to the ground. These extremely interesting problems naturally were always in the mind of the present encumbered adventurer until disposed of.

From Lake Tenaya, but four miles in an air line north-east of Yosemite Valley and nestling prettily at 8141 feet elevation in an old glacial basin between Mount Hoffman and Cathedral Peak, on the old Tioga Road toward Tuolumne Meadows, the progress along the bank of the creek is a delightful stroll on a balmy California summer day. In August there is not much water in the stream, and one crosses from side to side on the stepping stones or the tree-trunk bridges, as fancy or conditions dictate. There is practically no underbrush, tall, two-leaf pines alternating with open flowery meadows, where I saw crimson and purple and pink and white castilleias all in the same field, the crimson ones differing from the others apparently only in the shape of the tops of the colored floral bracts, being incised with two notches in the crimson or larger flower, but without notching in the other colored smaller blossoms.

As I wandered along here I stumbled upon a great, gray coyote taking his sun bath as naturally as one of our domestic dogs would. He was so startled at sight of my strange figure that he bolted across the creek in his first haste, sadly bedraggling his long, plummy tail. I came to a dead stop, and when he reached the opposite bank, thirty feet away, he also halted and gave me an amusing and almost human look of mingled curiosity and reproach before he buried himself in the forest. In my quiet advance I chanced on many interesting bits of tranquil mountain quail domestic life and found fresh deer tracks all about me.

Two forty-foot pine trees lying flat on the ground in a meadow, with roots torn from their soil-beds and with many needles still fresh and green, attracted my curiosity. The great boulder standing in front of each and the 500-foot smooth granite toboggan from the top of the nearby dome told the story of a giant game of bowling last winter. In another meadow I found the top of a tamarack pine twenty-seven feet long and six inches in diameter at the broken end. An examination of all the trees in sight in the neighborhood failed to reveal one without a top, and, as most of the needles were still green on this fragment, I inferred that a terrific gale had occurred recently and had wrenched this tree-top off and whirled it through the air a long distance to this open meadow.

About an hour's pleasant walk with the majestic, bare granite domes on every side will take one to the end of Tenaya Lake valley and to the river's notch in the rim of a vast bare-walled glacial amphitheater about a mile long, half a mile wide, from fifteen hundred to two thousand feet high and shaped like an enormous porcelain bath-tub with the end removed where the faucets usually are. The creek would make a Silver Apron here if there was enough water for the purpose, and the surface passed over was rough enough to produce the foamy, boisterous effect. As the surface has the glacial plus the aqueous polish, the water merely runs rapidly down the glassy

surface for about three hundred feet at an angle that makes caution necessary for the footman in walking beside or in sight of it.

Buried alone in this amphitheater, which I called Glacial Valley, where Nature is bravely striving to cover up the wonderful polished glacial pavements and bare granite slopes and to prepare a pleasanter abode for man and beast, aside from furnishing a means of holding the water a little longer than it is held now, I spent three happy days like Sinbad the Sailor in the Valley of Diamonds. I enjoyed the experiences immensely, admiring the lofty, impressive domes and great pine trees on all sides; hunting for trout, for leaves of the white violet and sorrel for salads, for berries, for flowers, for butterflies; revelling in the balmy sunshine, boying about generally, and incidentally though not intentionally finding mental rest and health. I saw several unusually beautiful blue butterflies, but was not able to catch any.

On the night that I arrived—August 10th, the date of the Laurentian shower of shooting stars from the constellation of Perseus—I was counting those brilliant celestial performers on their annual visit as I lay in my down sleeping-bag on my flood-sand bed in a little grove of quaking aspens and chinquapins at the lower, more open end of the valley. I had reached twenty-five in my count, one a magnificent exploding meteor or bolis which lit up the heavens like a great bursting sky rocket and left an incandescent wake or trail in the sky that persisted for three or four seconds, when I heard in the darkness crashes like artillery from the granite bluffs across the creek from my camp site. I remembered of reading in one of Mr. Muir's books of some such phenomena and knew that this unusual, startling noise in the night was caused by the fall of a mass of granite detached from the cliffs two thousand feet or more above the final resting place of the fragments. As these huge blocks slid, bounded, crashed down the slopes, gaining in momentum every instant, the startling detonations sounded like noth-

ing so much as nearby field artillery at a sham battle, followed by a rattle as of pistol shots. I stood up interestedly and strained my eyes for sparks in the direction of the uproar from this invisible conflict, but could see nothing. I had noticed as I strolled along the banks of the stream that the boulders looked strangely bruised as if a giant blacksmith with a hundred-pound sledge-hammer had struck them, not a million years ago or one year ago, but an hour ago. The granite might be elsewhere almost red from exposure to the weather, while the bruised place, always facing the crumbling cliffs, was as fresh and white as if a stone mason had just finished dressing off the discoloration. After my night's entertainment I guessed the cause. I found these disquieting evidences of rock avalanches all along the cañon on the west side.

At the end of Glacial Valley the stream made on August 15th a steep Silver Apron about six hundred feet high. In early spring, with bankful stream, this probably could be called a "thousand-foot waterfall," the convexity of the rocky surface being masked by the bounding water and spray. With the help of their rope the young men of 1894 evidently went down the almost perpendicular wall of the gorge on the west side of this fall. I reconnoitered the situation here carefully and thought I preferred a route on the less precipitous east side. The following day I successfully went over this new route of mine without a rope, one thousand feet down, and then tried to climb the thousand feet up the steeper rope route, but after reaching the level of the brink of the fall had to give up on account of a nearly vertical, impassable granite surface of twenty feet. I descended a little and made my way up through the great talus blocks and brush in a side gorge and thence over the west spur at the portal of the valley back to my camp. There are thus three feasible ways of descending this the first great obstacle.

The way that I prefer and used finally went up over a mass of compacted snow about five hundred feet wide by six hundred feet long, on the east side of the valley, to

a fifty-foot lone monticola pine; thence through a broad, desolate field of dazzling white talus blocks and a patch of tall brush to a point well down the cañon and directly above where the vegetation creeping up from below has nearly met the growth reaching down from above; thence zigzagging down along the crevices in the rock to the brush below. By stopping on the way at an isolated, conspicuous, twenty-five-foot-diameter, spherical granite boulder, left possibly thousands of years ago by the retreating glacier, poised on the edge of the gorge above the brink of the falls, one gets the best general views of the whole cañon trip.

Sitting in the shade of this feldspar, crystal-studded monument, the Half Dome, eighty-nine hundred feet high, is in full view ahead on the east side of the cañon, with Mount Watkins, eighty-five hundred feet, on the west and Sentinel Dome, eighty-two hundred feet, in the center background of the picture. All these peaks are high, high above the trampler's prospective route down the awful prehistoric glacier's ground-out and polished groove in the solid granite where the river has vanished altogether from sight into the cañon's confined and apparently bottomless depths. Gazing down that narrow, forbidding gorge from here a nervous soul might think that it looked like a picture by Gustave Doré of the Valley of the Shadow of Death painted for Dante's "Inferno" or Bunyan's "Pilgrim's Progress," so abysmal and impassable does it appear. An additional grisly touch of realism was given to this picture one day later in the trip when, after a particularly exhausting experience, as I lay stretched out resting, high up on one side of the gorge I saw an unwelcome company of five black, soulless buzzards slowly drifting down the usually birdless and deserted cañon. They floated down in disordered array on the other side, and hundreds of feet below me, like a band of villainous looking vagabonds bent on a purpose better imagined than described.

Backward from this outlook referred to the view is unobstructed to the first long Silver Apron of Tenaya Creek at the head of Glacial Valley and up to Columbia Finger, 10,700 feet high. To the west are seen the peaks, the chimneys and the snows of Mount Hoffman that I had climbed a few days before—10,921 feet high—looming up above the fringe of glacier, denuded and polished domes that line the rim of this amphitheater, while to the east, right beside and almost overhanging you, twenty-five hundred feet above, are the scarred and riven cliffs and cirques of Clouds Rest, 9925 feet, and its adjacent bald, granite domes. These latter stand like gigantic, silent, unchanging monuments of the passage of some prodigious ice-cap that gave them their final polish thousands of years ago. Beyond, the tall trees of Yosemite Valley at the foot of Glacier Point can be plainly seen, apparently a few hours away instead of four days' travel as it took me.

The barren field of great unstable fragments of shimmering granite that must be traversed here is directly under these peaks from whose surfaces occasional masses are so recklessly hurled, to lie piled about in promiscuous and treacherous confusion below. If one is familiar with the Theory of Probabilities he can cross here in mental comfort, but one not so sure of the soundness of that theory may wonder how it will feel to be struck in the ribs or the nape of the neck by one of those slabs of granite, twenty feet square by two feet thick, diabolically caroming along at about a hundred miles an hour.

Passing this boulder referred to it seems to be all trouble. When I got below the band of bare granite and felt myself safely into the brush again I found myself in the midst of the worst talus I ever saw—great monoliths among whose arches and arcades I wandered like a lost soul, looking for a way to another great mass of snow that I wanted to reach for a cooling meal. I had to give up my frozen entrée for lunch that day, however, and continued my scramble through the thick brush to

the stream, where I assuaged my thirst and took a welcome plunge into a pool. It is intensely hot in this V-shaped windless oven of the cañon in August, when it has been reached by the sun, even if this period is limited to the six and three-quarters hours between 8:45 in the morning and 3:30 in the afternoon.

This bit of a valley I called Talus Valley on account of the enormous size of the blocks and the further mass of evidence of this granite bombardment noticed in the valley above. The vegetation is so dense here, encroaching on the path of the creek as it does, and often overhanging it, that one can only proceed in the narrow bed of the stream—sometimes on the stones, sometimes waist high in the water. Through this thick growth great holes have been torn by these cliff bombardiers. Hole after hole is seen in the forest at one point here under a sort of chute, down which the winter's avalanches seem to be launched for their 2000-foot almost vertical rush. This phenomenon is not due to the spring floods, as the tops of the trees all point at right angles to the stream and not down stream, the direction the flowing water would have turned them.

In many cases the force that tore these trees from their foundations carried them so high up on the opposite bank that the river even at its flood did not touch them. In this little oasis in the cañon I saw three generous masses of snow remaining from last winter's fall, but I could reach only one of them through the impenetrable brush.

Near my camp, where, by the way, I had a fine fir-balsam bed, I noticed a three-foot granite cobble weather-beaten to a brown color by old age, worn round by long life in the river bed and yet broken in two as neatly as one would crack a boy's marble with a hammer on an anvil. The interior surface was as fresh as if it had been opened an hour before. The blow that divided that cobble would have made short work of a geologist.

From here the depth of the cañon, instead of being from fifteen hundred to two thousand feet, becomes

thirty-five hundred, increasing to five thousand feet at the Yosemite Valley end, while the width at top and bottom of the gorge decreases from what it was in Glacial Valley—at the bottom especially.

This valley is about half a mile long. At its head is the 600-foot fall spoken of. Then comes a thirty-foot fall in two steps, though probably appearing as a single leap in the spring—then a Silver Apron in August or a waterfall in June about two hundred feet long, with boiling rapids and cascades intervening. In a small grove of pines I started a flock of noble grouse as I waded along in the narrow river channel, and saw great vermilion clusters of ripening chokecherries. I felt like one walking behind the targets at rifle practice and was in somewhat of a hurry that morning to get out of range of a possible resumption of that reckless boulder practice.

The creek bed soon changed to a barren V-flume-like condition. On one side was the glassy granite ascending uninterruptedly at an unclimbable angle for two thousand feet or more to Clouds Rest. On the other side were loose boulders and granite gravel in a state of very unstable equilibrium and starting dangerous avalanches of rocks and dust at slight disturbances. Progress was hard here, as wading in the stream was out of the question on account of its swiftness. It had its compensations, however, for I found a mass of last winter's ice in a fissure on the way, and, sitting down in the shade of an immense monolith bridging the stream, crunched contentedly away at it for half an hour with the temperature about 110 degrees all around me and no wind. My happy daydreams were rudely disturbed by a huge slab of granite starting grinding down the incline beside my resting place and causing me to seize my belongings and flee. Soon after leaving this treat of snow I came to a point in the journey of which Mr. Gibbs said: "The stream suddenly plunged into an extremely narrow gorge. We seemed to have reached the final jumping-off place. It was as impossible to climb out of the cañon as to go back, and to

go straight ahead seemed out of the question." It certainly did look discouraging for a while. With a fall of about fifty or sixty feet, the stream dropped into a narrow, barren gorge about twenty feet wide. At the brink of the fall the cañon was about fifty feet wide, with nearly vertical bare walls about two hundred feet high, sloping off then for several thousand feet to the domes on either side. At first as my only escape I planned with my fifty-foot rope and extensions to lower my traps to the dry rocks in the gloomy lower gorge and then descend beside the falls as far as the jagged edges of the horizontal, broken-off strata would permit, jumping the last ten or fifteen feet into the black pool seen below and swimming out. Danger of striking a hidden rock in the pool, getting a cramp in the icy water or not being able to continue down the narrow gorge after all made me hesitate. I then reverted to my original idea that the wild animals had a trail down this cañon and I ought to find it. I went higher up on the right or west side of the cañon, where a little vegetation in an apparent crevice masked the surface of the rock and found the trail that I had expected. There were two ticklish places where the narrow footway on the sheer wall of the gorge was a smooth, bear-polished granite shelf less than a foot wide, with a ledge about six inches thick only four feet above a bunch of scrubby live oak. One had to bend low and secure a very insecure hand-hold on the thick, smooth stratum overhead. A hundred feet directly below the torrent roared angrily over its steep, uneven, barren course. These two points passed and the "Jumping-off Place" or second of the three obstacles was conquered. I then returned, monumented the trail plainly through here and found unmistakable evidence that Mr. John Bear had used this shelf trail to pass by, and not more than one day before.

The scenery here with its colossal rock effects is always fascinating. One could admire the silent, overpowering majesty of it all, or he could expect his head to be knocked

off any moment by falling fragments of this same majestic scenery. Confidence in the soundness of the Theory of Probabilities had settled my nerves for the trip, so I fared along on the lookout for creature comforts, borrowing no trouble.

The "Jumping-off Place" passed, like most human beings I pushed on down hill beside the stream as rapidly as I could, forgetting all about my serviceable theory of the bear trail, still on the right or west bank—the only one, apparently, on which I could proceed, as the opposite bank was a bare, vertical wall several hundred feet high. The water dashed wildly from shelf to shelf, squirming and twisting and leaping among the obstructions—now rapids, now waterfalls, now cascades—always noisy, always hurrying, nearly always unapproachable. Sometimes the brush and sliding ground drove me to the river. Sometimes the enormous boulders in the river bed or the impossible angled, glassy surfaces drove me back up the side of the gorge to the brush and the treacherous footholds. It was hard, hard work, even if it was going down hill. Virgil writes: "*. . . facilis descensus Averno*," but Virgil never tried to descend this Plutonian Tenaya Cañon.

At about six in the evening, two and a half hours since the sun sank behind the cañon wall, I reached a point where, sitting down to rest on a sixty-foot precipice, two hundred feet above the rushing stream, with my legs hanging over the edge, I thought I had found the first promising place in which to use my rope, the only use for which that I had found so far being as a pillow at night. By availing myself of several short spurs of rock and one small tree, it looked as if I could reach the bed of the river again. The stream, however, at this point at once entered a narrow defile thirty feet wide by three hundred feet high and disappeared from my view. The danger of getting down and neither being able to get back again nor to go ahead down the cañon, with darkness near at hand, decided me to turn back and descend

to the bed of the river for the night at the first available point.

The first encouraging place that I saw was at a great ice bridge, where, sacrificing my laboriously-gained two hundred feet of elevation, I recklessly waded down through brush and dust to the brink of the final precipitous jagged side of the river's channel. Here I jumped from crag to crag to the roof of the bridge, back to a still lower ledge, to a boulder, to the stream, and I was at least where I could drop my load and get some water for my throat, parched by four hours of thirst-producing physical effort on that sun-baked slope, even if I could never climb out again.

In the little pocket that I had dropped into, the floor of the creek consisted only of cobbles varying from six inches to ten feet in diameter. I quickly dug out a fairly level place under the shelter of a great block of granite, cut for a bed an armful of beautiful fingerferns, which fortunately grew in great profusion in a damp niche here, and luckily found enough vagrant twigs for a fire and my supper. Just as darkness closed in I hastily completed my domestic arrangements and, lying comfortably stretched out under the stars, began to plan for the morrow.

I was in a sort of a well. On each side was an almost vertical side of the gorge several hundred feet high. Thirty feet below me was the ice bridge, three hundred and fifty feet long by fifty feet high, spanning the sixty-foot cañon like a great flat arch, and eaten away underneath by melting so that it stood from ten to twenty feet in the clear above the rocky bed of the boisterous stream. Behind me stood a guard of enormous thirty-foot high boulders forming crooked, concealed channels for the water, but offering little encouragement for a climber.

It would not have been so bad if it were not for the fact that one side of the gorge at this point was about three hundred feet high, perfectly vertical, and every once in a while a missile from above would arrive in my small

backyard or on the ice bridge as if shot from a gun. I trusted to the Theory of Probabilities, but at intervals all through the night I was abruptly startled from sleep, above the continuous roar of the stream a few feet from my bed, by the ker-whang of a piece of granite on the nearby cobbles of the river bed or the ker-plunk of a fragment on the honeycombed roof of the ice bridge. The ice bridge dropped off a few huge lumps from its edges with disturbing crashes through the night also.

I was glad when daylight came. Logically I had figured out that I ought to make a dash of reconnoissance under that ice bridge and see if I could not proceed down the cañon on the river bed. Otherwise I must retrace my steps and seek a way over the domes—four thousand feet above me.

As I hastened along under that overhanging mass it seemed to me, to borrow from the imagery of the ancients, as if the evil spirits of the ice bridge might be saying exultantly to each other: "We've got him now. We've got him now." I finally started down the steep grade, and where progress is often impossible even with extreme agility and risk, and where it is always difficult and dangerous work jumping from polished boulder to polished boulder in the full daylight, where every move is a problem in itself, it was even more so in the half-light under this overshadowing, frozen bulk of dripping material at five o'clock that morning, four hours before the rays of the sun had reached the bottom of the gorge. I jumped this way and that, now slipping into the water, now landing safely on the rocks. I got wet from below and drenched from above. I noticed that the under surface of the ice was eaten away in large, hemispherical shaped cavities, and in one place it had been melted to a much greater height—ten or twenty feet perhaps—than elsewhere, and let in a burst of welcome light; but a very brief glance satisfied my scientific tastes that morning with those frigid drops like cold finger-tips reaching down uncannily and urging me on

when I hesitated or distracting me when I was about to jump. It seemed an everlasting journey and was getting "on my nerves," when I finally emerged with great relief, only to find that my work had been in vain, as I could not proceed down the cañon on the river bed on account of the size of the boulders and the lack of anything on their smooth surfaces to attach my rope to. I rebelled against struggling back through that chilling shower of ice-water, up hill, and, finding convenient footholds in the gnawed-off granite strata, clambered up on the ice bridge and walked back over it. One hundred and eighty-two paces I counted as I climbed back over its uneven surface—at least three hundred and fifty feet long, on August 16th, at about five thousand feet elevation.

It then appeared from my small point of view as if I must climb Mount Watkins, eighty-five hundred feet high, on the west side of the cañon in order to get past this doubtful place. Again my original theory of an animal trail came back to me, and I decided to return and try to pick up and follow that bear trail. After three hours of heart-breaking, almost hand-over-hand climbing along the sliding or brushy west side I finally got back to a point just south of the "Jumping-off Place" pass and sighted a promising way up the side of the gorge on the east or left-hand side, which looked like a route that bears or deer who did not carry ropes would select.

I enjoyed a rest and a bracer here by plunging into a convenient deep pool of icy water, took the stones out of my shoes and the leaves, acorns and twigs out of my clothes, and on starting up my new route found it, as I had anticipated, the animals' route. It was 8:45 that morning when I saw the first ray of the sun as I was escaping from that sunless chasm and getting up on a restful brushy flat or bench three or four hundred feet above the river bed. Here I found to greet me fragrant azaleas or rhododendrons, delicate pink mimulus, brilliant scarlet buglers, blue larkspurs, harvest brodiaeas, cardinal castilleias, chokecherries, thimbleberries, a pile of snow and a

view all around. It was a most acceptable and cheerful change when added to the sunshine.

My experiences from nine in the morning to four in the afternoon, high up on that gorge wall, out of sight and sound of the stream, were various and interesting. As usual, I promptly lost the trail on the granite. I found beautiful flowers and I munched grateful snowcakes and tart manzanita berries, the crabapples of the mountains. I fought the chinquapin and the deer brush for hours, and I suffered many disappointments from ill-chosen, labor-devouring "short cuts" down the steep, bare, sizzling granite to some unforeseen precipice and back again, using the sparse scrub-oak brush for a rope or threading my way cautiously along the narrow crevices in the sloping, rocky surfaces. If I had followed the rule of keeping high up as the deer usually do I should have saved time and strength and probably have found their trail there. At four in the afternoon I came to a cleared avalanche chute down through the talus and brush and reached what I called "Lost River Valley" and still another remnant of a snowbank. Here I soon discovered that I had entered upon the grounds of Mr. *Ursus Americanus*, but I did not meet his majesty during my short stay.

In this welcome valley, full of cedars and poplars and Douglas spruce, full of fallen tree-trunks and great ferns over six feet high (one I measured was six feet five inches long from ground to tip), full of thimbleberries and prickly, red-cheeked gooseberries as large as blackberries, I walked for nearly half an hour along the white bleached cobbles of a stream bed without seeing a drop of water, though I could plainly hear the river emerging from the narrow defile at the head of the valley, with its usual noisy acclaim. Later I found the water percolating from the sand and gradually accumulating force enough to deserve the name of creek again.

The view of Mount Watkins from the flat I traversed and from this valley is most impressive, and I believe that this huge, compact granite bulk, thirty-five hundred feet

high, really appears from the eastern side, with its vertical front and its clean-cut sky-line more majestic than the great, scarred El Capitan.

From Lost River Valley the steep, down-hill way to Snow Creek beside the riotous stream and under the spreading branches is simply a tedious repetition of talus or moraine, underbrush and fallen tree-trunks, requiring four long, weary hours for the author, with his load of knapsack and bed, and following in many welcome places a well-marked bear trail. At Snow Creek, at the end of the Mirror Lake trail and a few miles above the lake, paper bags, egg shells and empty sardine cans told that civilization was near.

If unincumbered one can stick to the right-hand side of the stream right through, making use at the high falls of the few stunted yellow pines and junipers and the fifty-foot rope. If encumbered with sleeping bag and knapsack, it will be found easier to go on the left-hand side when passing the precipice at the lower end of Glacial Valley. Nails on the sides of the heels are advisable on this trip. My one regret was that I did not carry a camera instead of three pounds of unused rope.

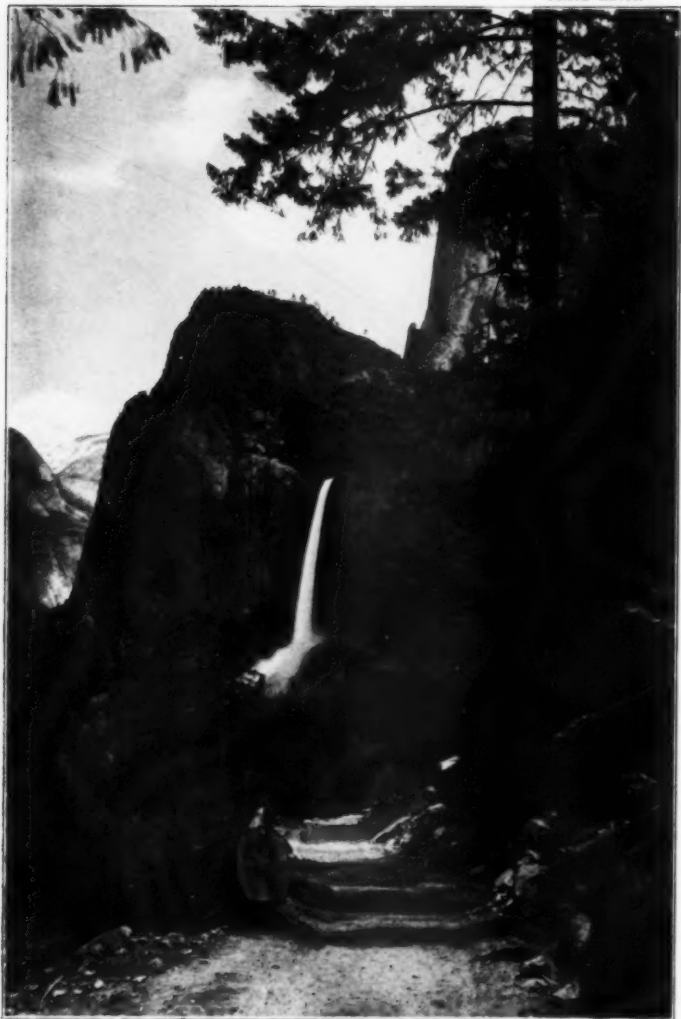
This trip is a very interesting, somewhat laborious short trip, dropping 4,000 feet in an advance of about eight miles. The danger from falling fragments of granite is present during about half the trip and is an appreciable risk. The geology of the cañon is striking, with its glacial pavements, domes, cirques, and moraines, but I saw no unusual flowers, except twinberry and azalea, that cannot be found at the foot of Mt. Hoffman with greater comfort and in greater profusion. Practically from the time one leaves Tenaya Lake Valley every step must be carefully considered. In other words, the trip down the cañon is one long feat of mental concentration, with little of that care-free feeling that is supposed to go with vacations.

That a permanent and safe trail will be built in the near future from Yosemite Valley to Tenaya Lake



SNOW CREEK FALLS LEAPING OUT OF A PECULIAR BOWL-SHAPED
DEPRESSION, TENAYA CAÑON.

From photograph by W. L. Huber, 1907.



THE BRIDAL VEIL FALLS, YOSEMITE VALLEY.

By courtesy of Marsh-Girvin Co.

through Tenaya Cañon seems unlikely on account of the annual destructive action of the rushing avalanches and the ploughing boulders.

From Snow Creek to Lost River Valley and around the impassable ice bridge defile through the brush and talus a trail might be constructed to a point near the Jumping-off Place Pass. Also from Tenaya Lake nearly to the precipice at the end of Glacial Valley a practicable way could be devised, but from this precipice past the Jumping-off Place over the talus fields and the smooth, steep, solid slopes I fancy a gap will be left for many years to come as a playground for the sliding snow masses and the bounding granite slabs of winter.

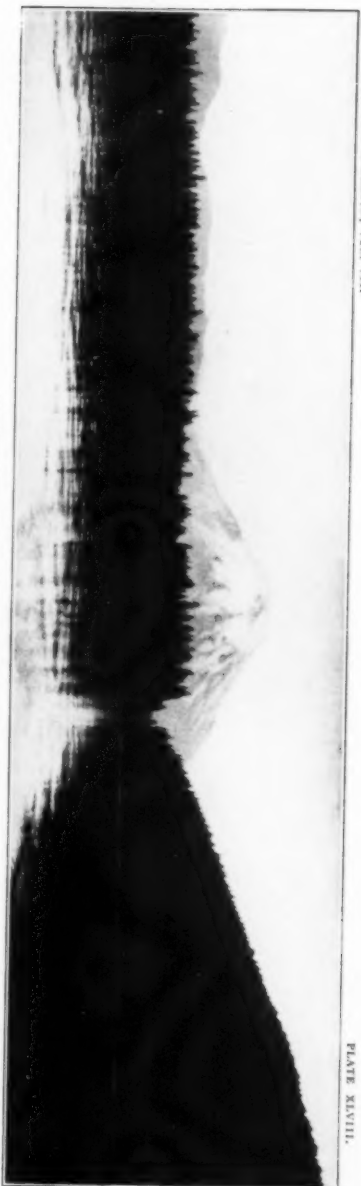
ON MT. ST. HELENS WITH THE MAZAMAS

BY MARION RANDALL PARSONS.

The Mazama Club of Portland, Oregon, was the first mountaineering club in the West to organize summer outings for its members. Fifteen years ago the pioneer outing was held at Mt. Hood, and each summer since then one or more of the great snow peaks of the north has been visited.

The Mazama Outings differ in many essential points from those of the Sierra Club. The weather conditions of Washington and northern Oregon do not favor protracted camping-trips, as those of California's summers do, and even in the brief fortnight of the Mazama mountain sojourn storms are only too apt to occur. The camp baggage, therefore, is necessarily cumbersome:—sleeping-tents have to be provided for all; canvas flies must be erected over kitchen stoves and dining-tables, and heavy bedding and clothing is imperative. As all this prevents the frequent shifting of camp, the nomad's life that we of the Sierra Club like to lead becomes impossible. Neither is it desirable, nor necessary for the enjoyment of the country. For instead of having countless ranges of mountains, hundreds of cañons, valleys, and rivers to explore, the entire interest of the trip centers about the one giant mountain, its glaciers, its vast snow-fields, and the flowery parks and meadows that encircle it, an emerald belt between the snows and the dark green of the forests.

It is among these open parks that the camping-grounds are generally found, for the upland forests, while rich in beauty, are too damp, dark, and cold for camping, and their dense undergrowth renders traveling through them, save on the infrequent trails, a feat advisable only for those strong of limb and wise in woodcraft.



MOUNT ST. HELENS, FROM SPIRIT LAKE.



MOUNT RAINIER AND MOUNT ADAMS, FROM SUMMIT OF ST. HELENS, 7:15 P. M.

From photographs by Marion Randall Parsons, 1909.



LAKE MERCED, IN MERCED CAÑON ABOVE YOSEMITE VALLEY (SEE PAGE 149).

From photograph by W. L. Huber, 1909.

An outing may be said to begin when one leaves the train and takes to the open road. So the St. Helens trip was inaugurated at Castle Rock, where we took wagons for the camp on Spirit Lake, fifty miles away. We traveled past the farms on the outskirts of Castle Rock, into a region of melancholy "clearings," where hundreds of tall, blackened stumps, hundreds of acres of arable land now choked with rank, unsightly weeds, told their tales of wastefulness and neglect. In pleasant contrast with the neatly kept farms where we lunched and spent the night.

We were early under way next morning, now in the forest among beautiful firs and hemlocks, whose branches were so closely interwoven that only little flecks and rays of sunlight penetrated their dense canopy. Here and there the delicate white blossoms of the Indian Pipe lifted their heads above the dark loam of the roadside, or a patch of brilliant red huckleberries or of yellow salmon berries gave pleasant excuse for lingering; and always a tropical luxuriance of ferns met the eye, ferns growing in the crevices of rocks, in the hollows of mossy stumps, even fringing the trunks of the fallen forest trees. Once in the course of the ride we caught a glimpse of our final goal, the lofty peak of St. Helens, rising above the forest-clad hills, faintly luminous in the noonday haze, as impalpable and unsubstantial as a vision.

In the mid afternoon we reached Spirit Lake, where a cool, delicious spring, a grove of firs, a warm lake for swimming and bathing, and a number of row-boats, generously loaned by a mining company of the district, combined to make an ideal camp. We began at once to explore the surrounding country, making trips to Harmony Falls, to the mines across the lake, and climbing the lesser hills and crags near by.

Our ascent of St. Helens was to take place from the north. In 1898 the Mazama Club conquered the mountain from the south, finding it the easiest and least dangerous of the snow peaks of Washington, but the northern side was to all our party untried ground.

About noon of the day preceding that set apart for the climb we gathered, thirty-six of us, at the commissary, with the lightest possible outfit for the night, and lined up for the start. No pack animals could be secured, so the men of the climbing party made pack horses of themselves and loaded up with the food and blankets of the entire party.

Our way led for half a mile past the outlet of the lake and down the Toutle River to the north of the Dry Cañon, up which we turned. For a little distance through its lower reaches abundant springs supply a cool, musical stream, and the shade of tall trees is not wanting. But all too soon we climbed out of the shadow into the hot, open cañon, unrelieved by tree or blade of grass, that leads up to the snow-line.

St. Helens, geologically speaking, is an adolescent, the youngest of the great volcanic snow cones of the north. Even to the superficial observer it is evident that the vast slopes of pumice stretching from snow-line to timber-line have not lain exposed to the disintegrating effects of sun, frost, and rain for the many long ages whose passing has transformed the lava flanks of Rainier into a wonderful flower garden. Far down on the slopes of St. Helens dwarfed firs and pines are making a brave struggle for a foothold, and grasses and tiny strawberries are creeping hardily towards the snow; but many a long year will pass before the white cassiope bells and the starry erythronium lilies and the shaggy-headed anemones will bloom each summer besides the receding snow.

Our camp was made in the shelter of the highest timber, if timber it could be called, that was little more than shrubbery, high on the bleak mountainside in a little depression where the winds that blew off the snow could in some measure pass over our heads. Blazing fires, supper, and an hour of story-telling brought us cheerfully to bedtime, when we lay watching the brilliant stars and the dim outline of the mountain against the sky until we fell asleep. Little did we guess then what our next night impression of St. Helens would be!

We arose at five next morning, but there was some delay in starting, and we were not on the march till past seven. A little above camp we dropped into the floor of one of the numerous glacial cañons by which the mountain is furrowed, and by means of it approached the first snow-slope. Before we had fairly begun to climb, the sun, whose earliest rays had reached the northern slope, had so far softened the snow that it made slow, difficult going. Nor was this the worst. On St. Helens the arms of rock that extend into the snow are composed of lava boulders loosely imbedded in pumice. Wherever rock and snow meet, the action of the sun sends cannonades of rocks down upon the slopes below. We were seldom out of range of this bombardment. Fortunately the rocks that fell were small and scattered, and the snow was seldom so steep that we could not dodge; but the thought of the havoc that might be wrought in our ranks should the mountain choose to let loose the full strength of its batteries scarcely added to the pleasure of the climb. We encountered no dangerous work on the lower part of the mountain, but twice the crossing of crevasses consumed so much valuable time in the adjustment of alpenstocks and ropes that it was not until two o'clock that we reached the top of the "Lizard" and paused for lunch.

The Lizard is a long promontory of rocks, a divide between two glaciers. Its tail loses itself in the lower pumice slopes, while its head stretched far upward, two thirds of the way to the summit. It was our first opportunity to fairly gauge our rate of progress—hardly an encouraging one in view of the steeper climbing that must lay ahead. This was the time, of course, for us to acknowledge our defeat and turn back to make a better start some other day, but to give up was the last thought in the minds of most of us. Eight of the party did wisely determine to return, but the rest of us, in the cheerful optimism of half-way up, thought we might "if we tried" reach the summit by four-thirty.

However, there was still a long snow-field to be traversed, still another rocky promontory to be climbed, and it was close upon five o'clock before we reached the foot of the final steep ice slope that guards the summit. Here it was necessary to cut steps and to use the rope, and although the difficult place was short, probably not more than two or three hundred feet, our progress had to be slow. At last we reached the top of the ice, climbed a little rocky eminence, and emerged upon the broad snow-field that crowns St. Helens. The true summit lies at the southwestern extremity of this field, so we crossed it and at 7:15 attained the highest point.

To-day, as we who stood there recall the scene, memory assures us that it was one of the most impressive and beautiful that our eyes had ever met. For hundreds of miles the forest country lay stretched at our feet, dark and shadowy and half veiled in mist. Westward the great red sun, vanishing in a rosy glow of fog, seemed also at our feet, so far were we set above the sea and its dim horizon line. The sky was bright with rose and yellow and palest green. North, east, and south of us the three great snow cones—Rainier, Adams, and Hood—were so aglow with sunset light that it seemed as if lingering flames must still burn on these altars of ancient fires. Before their glory was gone night had closed in upon the lowlands. The winds of the daytime were stilled and the silence of the high places was upon us. The lowland nights are full of sound, a thousand wee rustlings and whisperings and flittings of unseen winged creatures, the stir of leaf, the tinkling drop of water; but in the white lands when night comes all is silence, a silence significant not of death, but rather of the unborn ages yet to come.

All this we can remember now, but at the moment the wonder of it was almost lost in the sense of loneliness, of vastness, of piercing cold. That enormous bulk of ice, snow, and treacherous rock separating us from fire, water, food, and the haunts of man was all that our minds could

consciously grasp. We rested only long enough to register our names and to elect to membership in the Mazama Club those who had qualified by the ascent. Short as the delay was, our captain was already impatiently calling us to hurry. The bitter cold, too, gave scant encouragement to loiterers, so we hastened to start on the descent.

It has been asked why we did not choose the less hazardous experience of remaining on the summit all night. We might have more safely done so, indeed, had we been better equipped for it; but some of us were without sweaters or coats, our feet were soaking wet and almost numb with cold, and we were without food. With several rather delicate women and one boy of twelve in the party, the risk of exposure was deemed too great.

The sun was now quite out of sight and a chill gray twilight was creeping up the glacial cañons from the darker wooded valleys. As we stood on the brink of the ice slope the last gleam of color faded from the distant mountains. A luminous, winding band of silver, marking the course of the Toutle River, still shone in the dark forest to westward, but all else was gray and cold, desolate and forbidding.

We were placed in line, alternately, a man and a woman, and the rope stretched between us with the caution not to grasp it except in case of a slip, but to pass it lightly through our hands. It was fastened at the upper end to two alpenstocks which were planted as securely as possible in the ice and were held by a strong man. Two men then went ahead with ice axes, with which they enlarged the steps we had used on the ascent, for the surface of the ice was now so hard frozen and slippery that every change of position had to be made with the utmost care. The step-makers went forward to the end of our fifty feet of rope, and then the signal was given for us to advance. Facing the mountain, alpenstock in one hand, rope in the other, we went down backwards as on a ladder, one step at a time, as far as the line would permit. Then we halted. The last man followed,

holding the end of the rope, planted it again, the step-makers went forward, and again we advanced six or eight steps. Sixteen times the rope was shifted in this manner, and sixteen times we stood for five or more minutes motionless in the freezing cold, our hands and feet so numb that it seemed almost impossible to move when the signal to change position was given.

It was fortunate that all of us were not equally aware of the gravity of the situation. The rope, insufficiently secured as it was, could not have borne much strain, and, as our company was largely composed of tenderfeet, there was among us scarcely one in five who knew how to save himself from the consequences of a slip on the easiest snow slope, much less on the glassy, steep surface of that ice. Had some of the novices realized how easily a single misstep could have precipitated one or more of us into the cruel pile of rocks that lay so far below, an attack of unreasoning panic might have brought about that very catastrophe. That no accident did occur is due in great measure to the cool, unhurried, confident manner of our leaders, to whose work that night too high praise cannot be accorded.

We reached the rocks at last, but not until every ray of daylight was gone. The young moon, from which we had expected some assistance, was hidden behind the mountain, and though its light could be dimly perceived on the distant landscape below us, we were in shadow, in almost complete darkness. While we stood there, shivering, hungry, inexpressibly weary in body, and in mind almost despairing of ever reaching shelter that night, two lights flickered up, far, far below—beacon fires that our comrades had kindled to help us find the way. It is difficult to describe what hope and encouragement those two little friendly gleams put into our hearts. They typified the warmth and sympathy of human fellowship as against the merciless indifference that nature in her sterner moods shows to the needs, even to the lives, of men.

Our way now for awhile led down a rocky crest, composed, like much of St. Helens, of large, easily detached boulders set among smaller rocks and loose pumice. We formed in a close phalanx, two and two, a man and a woman, with the rope between us. Walking as near together as possible, we moved slowly forward. If a large rock showed signs of starting we threw our united weight against it, and either stopped it or deflected it to one side, where it could roll its course to the foot of the mountain, if need be, without harming us. The detonations of these crashing rocks, the crunch of our marching feet, and the flash of steel caulks on the stones remain vivid recollections of this part of the descent.

A rock slide was the next incident. Such great quantities of rock were displaced with each step that it was judged wisest to cross this only two at a time. By holding hands and keeping step the transit was made safely, though with a tremendous accompaniment of rolling stones. We emerged from this on the snow, fortunately a deeply furrowed and not very steep field, which brought us to the top of the Lizard. So far we had been following our course of the afternoon, but here, instead of descending to the snowfields on the right from which we had made the ascent, we concluded to keep on down the Lizard to avoid if possible the steeper snow, which, in its frozen condition, would have been very dangerous. The Lizard's backbone was composed of less formidable boulders than we had encountered nearer the summit, but even these smaller missiles became objects of terror in the darkness, especially as, owing to the delay on the rock slide, the party had become scattered and it was impossible to know in what direction danger lay. The cry of "Rock coming!" was so frequent and was attended by such breathless moments of suspense—ears trying to locate the ominous crashing, eyes straining the blackness in a vain attempt to see the threatening object—that for many a night afterwards we were haunted by it in our dreams.

Once we followed the wrong arm of rock and found

ourselves blocked at the end by a net-work of crevasses. Here, at the urgent request of a distant voice from the snow-field, we sat fast for ten minutes holding the rocks down until the explorer below was out of range before we could retrace our way and climb up to the western arm. The camp-fires were growing closer now, but there was still another rock ordeal to pass through, a narrow chimney leading from the Lizard to a snow-field, nearly all of the upper part of which was within range of the chimney. This, however, was the last of the rock bombardment, indeed the last difficulty of the descent, for the snow-field led by an easy grade to the edge of the pumice slope.

At two o'clock in the morning, nineteen hours after we had left it, our stumbling feet brought us to the temporary camp, with its great fire, its steaming cups of chocolate, its bread and meat, and greatest blessing of all, its sleeping bags, into which we straightway tumbled without even the ceremony of removing the grease paint from our faces.

We were none of us the worse for the experience next day. On the contrary, we awoke with a sense of exhilaration. The sun seemed to shine with a more cordial warmth and the joy of being alive on good old Mother Earth was a little keener than on an every-day morning. We were a little disposed to philosophize on the comforts of the commonplace and the folly of seeking to attain high summits, but we were exceedingly glad to have been there just the same.

The few remaining days of the outing sped pleasantly, though the eve of our departure brought the rain which had fortunately spared us so far. The final day and night in camp passed in that jumble of discomfort and hilarity which storms generally produce in camp, provided the elements have been considerate enough to reserve their bad behavior for the last days, when good fellowship is at its height and a certain jaunty indifference to cold, wet, and such extraneous matters has become the criterion of one's position in the social economy of camp life.

And then came the breaking of camp, and we followed the homeward road back through the forests to find that while we had been on the heights autumn had been busy with the low country woods. For on every maple and dogwood were painted her warning signs, telling us that it was time to leave the summer country and go back to the world of roofs again.

A HIGH SIERRA CIRCUIT ON HEADWATERS OF KING'S RIVER

BY WM. CONGER MORGAN.

The stages had rolled away one by one, leaving in their wake a trail of dust not so tenuous but far more persistent than the trail of a meteor. Our little party stood alone in the shadows of Giant Forest, as we were to prolong our outing another fortnight by tramping through the High Sierra at the headwaters of King's River.

In the cool of the morning the descent of the Marble Fork and even the ascent of the other side in the bright sunshine was most invigorating and delightful. We paused to look down the valley to where the cañon walls rose steep, and to note also the gathering storm-clouds which later in the day sprinkled us with fitful showers. Up and across Silliman Creek our trail lay, past Willow and Cahoon Meadows, whose flower-dotted surfaces had been badly ruffled by the packtrain returning from its summer outing with the Sierra Club. Near East Fork we noted a new trail built out to Twin Lakes, which empty into Sugar Loaf Creek, one of the tributaries of Roaring River. Pausing for lunch at J. O. Pass, we met a party coming out from King's River whose members assured us that Glenn Pass, over which we hoped soon to travel, was unquestionably impassable for animals since there was no snow to cover the talus.

The divide between the Kaweah and the King's rivers makes interesting travel. At Profile View the late afternoon shadows had settled in the depths of the distant cañon, but the heights were yet splendidly illuminated. To the right loomed Brewer and its two stalwart guards, King, Gardner, and those other peaks that make the upper King's River unsurpassed in the Sierra. Down the slopes and through Marvin Pass we hurried to Horse Corral

on whose broad acres, knee-deep in grass, were grazing a score or two of animals. A cup of hot tea was Mr. Kanawyer's welcome as we dropped into the grass for a few moments' rest, and a camp-fire big as the biggest lighted up the little grove in which we slept that evening.

The next day's journey led us through Summit Meadow and then down on to the floor of the King's. The day was hot. A glaring sun beat against the lofty walls of rock and its reflected heat gave to the gorge the character of a Turkish bath. Scarcely a breath stirred and the river seemed to keep the air at the maximum humidity. Walking was oppressive; everything seemed uninteresting; and the writer recalled vividly his first entrance into Yosemite Valley when, on a similar day he toiled ankle deep through the granite sand below El Capitan and would not have given a copper to have had Bridal Veil Falls in his back-yard forever. But such days pass! The six miles from Cedar Grove to Kanawyer's seemed twenty, but were finally over; and a plunge in the snow-fet water washed away the dust from our faces and the fret from our minds.

We laid over a day to outfit for our round trip into Paradise Valley, up Wood's Creek, over Glenn Pass and down Bubb's Creek. Our first day consisted of a pleasant stroll up the South Fork through the timber and shrubbery that covers the river bottom. We watched the rainbow trout in the crystal water and picked cool, luscious berries from bushes drenched with dew. At Mist Falls we watched for a long lunch-hour the cataract of jewels pouring over the rocks and forming rainbows which framed-in the exquisite picture of Gardner Falls on the opposite wall of the cañon. Then came a scramble for a couple of miles of bad trail over very wicked talus, followed by a leisurely saunter through the wooded meadows of Paradise Valley.

Knowing that the Sierra Club had stocked the creeks of Paradise Valley with Eastern brook trout, we were anticipating the pleasure of beholding these dainty fish within

the rim of our frying-pan, so while passing up the valley we kept a sharp look-out for them. But, though the water seemed ideal, we saw no trace of a fish. Snakes there were in this as in the other Paradise, but not a trout of any kind; and although it seemed useless to "go a fishin'" when no fish were to be seen, we dropped our flies into most of the promising water, but neither from riffle nor pool did we get a rise. What has become of the fifteen thousand fish planted here in 1906? Have they worked their way up the stream to the headwaters? We saw nothing of Eastern brook trout up Wood's Creek. Or have they gone down over Mist Falls? Some certainly have, for more than a dozen have been caught about Kanawyer's during 1907 and 1908. It is much to be hoped that most of them may yet be found in the waters of the upper basin.

We made camp that night at the foot of the spur which so conveniently runs out on the floor of the valley, affording a magnificent view of the three cañons radiating from this point: to the north the gorge beneath Muro Blanco, to the east the valley of Wood's Creek looking to Mt. Baxter and Sawmill Pass, to the south at our feet the beautiful Paradise. Our sunset reveries from this bluff were interrupted by the bringing in of a fine buck which furnished us with venison for several days to come.

The ardor of the next day's tramp up Wood's Creek was dampened somewhat by showers and the fear of showers. Our views were confined to the immediate valley, for a pall of cloud rested on the shoulders of the titan peaks—King, Gardner, Rixford, Black, Diamond and Baxter—which guard Rae Lake. We made camp in the rain, but by night-fall a few stars and a faint moon appeared. As we sat about the camp-fire, drying out and enjoying the warmth which worked its way into the marrow of our bones, the flickering shadows brought to our minds thoughts of one who was "sleepin' out an' far" that night somewhere beneath the crests of the same peaks that loomed above us.



A VIEW ALONG THE RIVER, PARADISE VALLEY.

From photograph by W. L. Huber, 1908.



RAE LAKE, WITH MOUNT RIXFORD IN THE CENTER OF THE SKYLINE.
From photograph by W. L. Huber, 1908.

The succeeding day was given up to an investigation of the region. Here glaciers have cut down into the solid rock for more than a thousand feet, scooping out a broad basin between the oft-times steep and well-polished sides. Above the lake rise the ragged remnants of rock which mark the original levels when the ice-king began his carving. The whole spirit of the region is wild, untamed, untameable. The smooth and rounded surfaces of Fin Dome serve by contrast to emphasize the sharp and rugged lines of other peaks. Breathing in the air from an elevation two miles above sea-level, one feels the boldness and strength of the mountains in each bone and muscle and longs to climb each peak and gaze out far and wide from this crest-ridge of the continent. But for another day the climbs; to-day the limited look-out and such as may be gained while circling the lake with fishing rod in hand.

And such fishing! From the rocks we could see them, the hungry monsters that inhabit the depths of Rae Lake, coming up to the surface occasionally for the sun-loving insects. A cast of the fly, a swirl of water, a tightening of the line as the angered fish feels the sting of the barb, a mad rush and then—well, we didn't lose either rod or reel, but all else went in the first experience of more than one of our party. When later, new leaders and tested lines had been reinforced by greater care and caution, several beauties were successfully landed and record catches established by all.

It is a well-known fact that when newly planted in waters furnishing an abundant food supply, trout grow to enormous size. After a dozen or twenty years, when offspring "compounded annually" cause a struggle for existence, the size of the fish diminish and all grow to about one weight. In many lakes of the Sierra the second stage has been reached, notably so in Bullfrog Lake, where the fish run remarkably even and about ten inches long. In 1901 fish were first planted in Rae Lake. They are now plentiful and very large. The heaviest caught by any of

us was something under four pounds. A "six-pounder" was reported taken by a man whom we met coming down Wood's Creek.

In "Our National Parks," John Muir speaks of the headwaters of King's River as being particularly liable to mid-summer thunder showers. If any of us, as the result of experience elsewhere in the mountains, felt disposed to question this statement, our doubts were entirely set at rest; for during ten days every afternoon brought rain in larger or smaller quantities. While at Rae Lake we were treated to a Class A thunder storm. For more than two hours rain fell in torrents, lightning flashed and thunder rolled through those mountain wilds until it seemed as though the foundations of the earth must be giving way beneath our feet and we might expect the crags to topple above our heads any moment.

Our experience would suggest the advisability of being provided with some rain-proof garment when starting for a trip into this region. A jacket of waterproof silk, reaching below the hips or even to the knees, would be light, could be rolled tightly into a small bundle and would be very serviceable as a protection against cold as well as water.

On the following morning we set out early to conquer Glenn Pass. The trail indicated on the government maps crosses Rae Lake where the long neck of land runs out into the water so suggestively. Our examination of this route on the previous day suggested a possible soaking for men and animals, an indication which we have since learned was fully borne out by the experience of another party* which did cross at this place. We crossed the lake at the narrows, half a mile further to the north, and found it a much better ford.

Turning south we picked our way along the lake shore, gaining elevation as opportunity offered, until we struck the Glenn Pass trail running west. This leads over rough talus lying at a sharp angle. After crossing the chain of lakes lying in the basin of a little cirque, the trail starts

*Sierra Club Bulletin, Vol. VII, No. 1, p. 22.

right up a steep talus pile of large rock for the 12,000-foot level. This rise of 800 feet can be made easily by foot-folk, but it looks difficult for laden animals, and the trail is very bad. In order to avoid any danger from falling rocks, most of the party made the ascent before the packtrain started. Imagine our surprise, then, to see them appear on the sky line in less than an hour after leaving the lakes!

From the pass the government maps indicate a trail running westward to Charlotte Creek. Five hundred feet below the pass to the south side lies a little lake, or rather two lakes, which empty into Lake Charlotte two miles below. One of these lakes is not shown on the government map and doubtless was well muffled in ice and snow when the survey was made. Between the pass and the lakes an enormous fan extends. Forsaking the trail, we plunged straight down hill to the lake and followed down its outlet without difficulty, saving half the distance and all of the "very bad going"* which we have since learned is to be experienced in attempting to follow the indicated trail.

We did not stop at Lake Charlotte, although it is one of the most beautiful mountain lakes and is filled with fish, but enjoyed it only while skirting its shores on our way to Bullfrog Lake, where we camped. Pictures of this region usually consist of white snow and white sky, separated by a very ragged line of black rock. The exceptionally light snowfall of the year 1908 showed us the true Bullfrog without its mantle of white. On the one hand the rounded, comparatively gentle slopes of Rixford, on the other the perpendicular ramparts of the Kearsarge Pinnacles; before us the lake, skirted by the trail leading over Kearsarge Pass, probably the oldest gateway across the Sierra Nevada. We laid over here for a day, and while some of us spent the time fishing and idling among the beautiful Kearsarge lakes, others climbed up to look over the brim of the cup in which we found ourselves.

Starting from the level of the lake, about 10,500 feet, we ascended the peak to the northwest of Bullfrog which,

*Sierra Club Bulletin. loc. cit.

rising something over 12,000 feet, looks down upon the little lakes toward which we had plunged on the day before. Following along the ragged rock of the ridge we scaled the pinnacle above and to the east of Glenn Pass, then scrambled to the top of Rixford, crossed over to Gould and rested upon its fantastic summit. From here we descended on the eastern side of the divide to linger for a few moments about Heart Lake, then crossed back over Kearsarge Pass on the old trail.

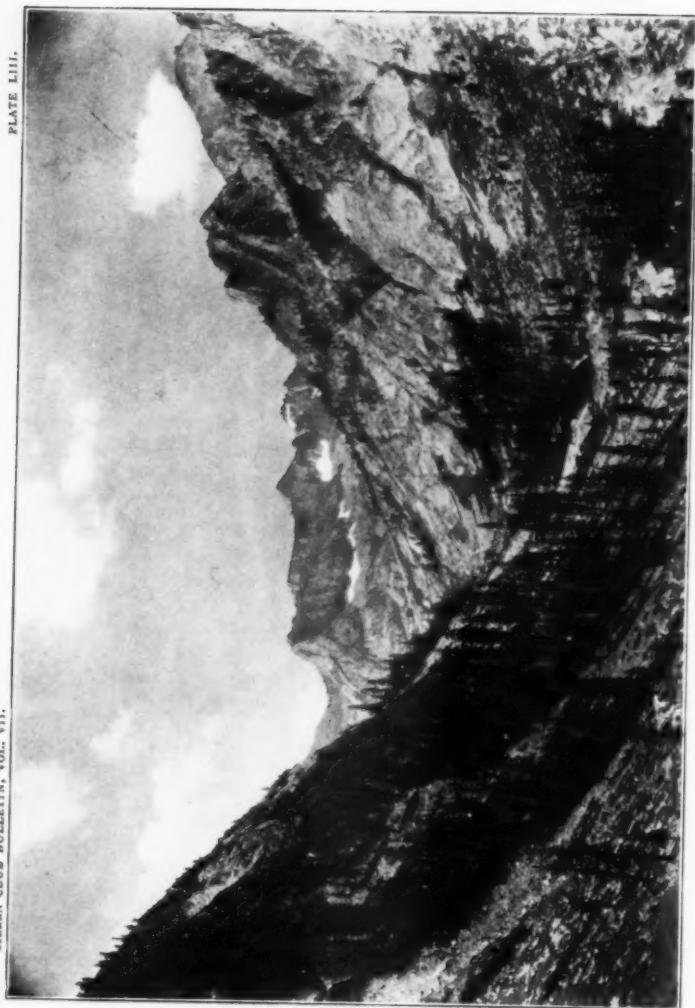
Much of the sky was overcast with black storm-clouds and sunshine alternated with rain, producing most weird and beautiful cloud effects. Though by no means as high as many another peak, Rixford, set in the center of what is one of the most ragged sections of the country, offers to the mountaineer an unsurpassed spectacle. Half a mile below our feet lay Rae Lake appareled most exquisitely in purple and green. Above the glacier-swept valley, the mountains lift their heads in defiance to the storms. To the east lies the long sweep of Owens Valley. To the south are Bullfrog and the Kearsarge lakes. Above them is the sharp arête of the Kearsarge Pinnacles and University Peak, the white patches of snow emphasizing by contrast the extreme blackness of the storm-drenched rocks. On the horizon, piercing the sky-line with their sharp and angular crowns, stands that unsurpassed cluster of peaks which, radiating from Central Peak, includes Bradley, Keith, Junction, Stanford, Deerhorn and the spurs of the two Videttes. To the west, the gentler valleys of Bubb's Creek and Charlotte Lake. To the northwest, between Mt. Gardner and Fin Dome, the Sixty Lake Basin, thickly studded with emerald tarns. In five hours we traveled as many miles and never set foot below 12,000 feet. Nameless peaks by the score loomed about us on every side. The most vivid impressions of the whole outing came from this day in the clouds in the region of Rixford and Gould.

Next day we moved down Bubb's Creek to Junction Meadow, about a mile below East Creek, where we



LITTLE LAKE, BELOW GLENN PASS.

From photograph by W. L. Huber, 1908.



LOOKING UP EAST CREEK TOWARD MOUNT BREWER.

From photograph by W. L. Huber, 1903.

camped in a beautiful cluster of huge pines. Passing through the poplars that grow in profusion along the bed of the stream, we noted the work of avalanches which occurred in this region in 1906. The trees were broken and twisted and torn in an amazing way. Whole sections were laid as flat as wheat in the swathe. Many trees had been broken half off and laid prostrate. Some of these had received sufficient sap from the shreds of bark connecting the stump with the top, to remain alive, and now, accustomed to short rations, were green again, turning their heads once more to the sky. So badly was the timber down that for considerable stretches a trail had to be cut out with axes.

A side-trip up to East Lake and Lake Reflection occupied the next day. The air was so clear that the summit of Brewer seemed within a short hour's walk, yet five hours would probably have been much nearer the truth.

In the morning we returned to Kanawyer's and the next day started on the trip out of the cañon, spending a night at Cedar Grove and another at Bearskin Meadow. The dash and zest for the trail were laid aside at the Grant Grove of Big Trees, and resting in the shadow of a giant sequoia, for an hour or two we allowed the peace and quiet of the Sabbath morn to steal into our hearts. Two nights and the intervening day we rested at Sequoia Lake, near Millwood, enjoying most thoroughly our long swims in the warm water.

And although the embers of the last camp-fire are dead, the glow in the heart kindles anew as the twilight hour creeps over us with its subtle spell calling forth the spirit of reminiscence. Again we feel the bracing air of the mountain-side laden with the fragrance of balsam and fir. Once more the song of birds mingles with the whispering of the pines and the murmur of the brook. We start afresh on the dewy trail; we climb the heights; we seek the noon-day shade; and then, as purple shadows gather on the western slopes, return to camp and friends and—fall asleep.

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BERGSCHRUND OF THE MOUNT LYELL GLACIER, YOSEMITE NATIONAL PARK.

From photograph by W. L. Huber, 1909.



ANOTHER PART OF THE BERGSHRUND, MOUNT LLEWELLYN GLACIER.
From photograph by H. E. Bailey, 1929.

REPORTS.

REPORT OF OUTING COMMITTEE, 1909 OUTING.

The 1909 Outing of the Sierra Club to the Yosemite National Park was by far the most successful outing in the history of the Club. Boston, New York, Philadelphia, Chicago, San Antonio, Portland, etc., were represented by members of the party. The transportation and commissary problems were so managed as to leave little room for improvement. It was discovered long before the Outing that the number of applications would far exceed the limit originally set of 150, and rather than disappoint more than necessary the limit was raised. There were 180 regular members of the party, and including employees, assistants, and guests, nearly 220 persons started from the Yosemite Valley on the grand circuit of the park.

It is doubtful whether any finer trip, combining such varied and magnificent scenery with such splendid camping opportunities, can be had in the same number of miles on the face of the globe. The circuit, beginning with Yosemite, included the Little Yosemite, Upper Merced Cañon and lakes, the attractive high mountain camp-ground at Tuolumne Meadows, the Grand Cañon of the Tuolumne, Matterhorn Cañon, Rogers Lake, Pleasant Valley, and the famous Hetch Hetchy Valley. Climbs of Mts. Clark, Ritter, Dana, Lyell, and Conness were made by members of the party. A knapsack party of fifteen went to Mt. Ritter and one of forty down the wonderful Tuolumne Cañon. Financially the Outing was a success and a small balance remains to carry preliminary expenses for the next Outing. Neither illness nor accident of a serious nature occurred to mar the pleasure of the trip.

The presence of John Muir during the entire trip added much to our pleasure, as did the wonderful music of Signor de Grassi and his wife, and the lectures on trees by Dr. Jepson.

A serious problem confronts the Outing Committee. The Outings have become so popular that over fifty applicants for this last Outing could not be accommodated even with the increase of membership permitted. The applications now on file for this year's proposed Outing to King's River Cañon already exceed the number that can be accommodated. Of course, a number of these will probably change their plans or be compelled to forego the trip for one reason or another, so that there is still a chance for applicants. There will, however, be a great number of

applicants who uniformly delay their applications till late in the spring who cannot possibly be taken care of.

Another matter of importance has arisen. The burden, not only of responsibility, but of actual labor placed on the management, with the increase in size of the Outing parties, has become too onerous. It is the intention this year to provide additional and more competent assistance in every department. This, together with the increased cost of provisions and equipment which has taken place during the past years, compels the taking of a step which is done with reluctance but only after careful consideration and conference with members of former Outings. The Outing deposit will be raised from \$45 to \$50 this year. This will enable us to increase service and perfect many details. The Outings will still afford very inexpensive vacations when one takes into consideration the character of the high mountain regions visited and the quality of the service furnished.

The Outing planned for this year to the King's River Cañon affords a most enjoyable trip from every standpoint. Main camps will be established on Bubbs Creek and in Paradise Valley, making the wonderful High Sierra region, with its picturesque lakes, crags and peaks, easily accessible.

WM. E. COLBY,
J. N. LE CONTE,
E. T. PARSONS,
Outing Committee.

THE NEW PARADISE TRAIL.

The most important trail work ever undertaken by the Club was practically completed last fall. For years the importance of a direct trail up the river, via Mist Falls, connecting the King's River Cañon with Paradise Valley, has been recognized. Though but three miles in length, for the greater part it had to be built over rough talus slopes through dense brush, and in places blasted out of solid rock. Professor J. N. Le Conte and an engineer from the Forest Service had gone over the proposed route carefully and estimated that it would cost approximately one thousand dollars to build. On account of this large expense the trail remained unbuilt for several years, in spite of the fact that the Club in its report on the King's River region, published in the *SIERRA CLUB BULLETIN* for January, 1907, called attention to the importance of building it. About two years ago a power company did some work on this stretch, but it was still very dangerous to travel and next to impossible to get animals over it. Last spring the Directors of the Club took the matter up and

approached the Board of Supervisors of Fresno County, the Forest Service, and one of the transportation companies with the proposition that the Sierra Club would appropriate two hundred and fifty dollars toward this work provided each of these other interests would appropriate a like amount. All responded cheerfully and the one thousand dollars was raised. The actual construction was begun under the supervision of Mr. Tom Kanawyer, who contributed valuable time, tools, and powder, and the trail was practically completed last fall. A small amount of work remains to be done in the spring before travel commences, and there is a sufficient amount of the joint fund left to complete this work.

This trail will open up and make easily accessible all the wonderful High Sierra region around Woods Creek and Rae Lake and will bring Paradise Valley, with its splendid feed for animals, within two hours' travel of the King's River Cañon, where feed is so scarce.

We trust that this is only the beginning of important trail construction to follow, and we feel deeply indebted to those who so generously assisted in making the construction of the trail possible.

WM. E. COLBY,
J. N. LE CONTE,
E. T. PARSONS,

Special Committee on Trail Construction.

REPORT OF THE LE CONTE MEMORIAL LODGE COMMITTEE.

The Lodge enjoyed a greater vogue than ever during the summer of 1909, and is proving of great service and satisfaction to the increasing crowds resorting to the Park as a source of general and reliable information about the outlying parts of the Park. The activities and results of the season are detailed in the following report of the Custodian:

TO THE LE CONTE MEMORIAL LODGE COMMITTEE:

The Le Conte Memorial Lodge was opened for the season of 1909 on May 17th and closed August 19th. At that time nearly three thousand visitors had recorded their names in the Lodge register, and as the daily registration was usually about half the number who came, five thousand visitors for the summer is a conservative estimate. Many returned again and again to make use of the limited library and the maps or to rest and enjoy the Lodge. Genuine interest in the work of the Sierra Club and in the life and work of Prof. Le Conte was continually ex-

pressed, as well as pleasure in finding such a place as the Lodge in the valley.

Those books in the library pertaining to the mountains, the botanies and the books on birds were constantly in use. It would be well if duplicate copies of Mr. Muir's books, "Mountains of California" and "National Parks" could be placed on the shelves, as well as a copy of Prof. Jepson's "Flora of Western and Middle California," which is greatly needed. The following books were added to the library:

A complete set of "Appalachia" in bound volumes; five bound volumes of the Sierra Club "Bulletin;" "Mountain Wild Flowers of America," by Mrs. Henshaw; "The How and Why of the Emmanuel Movement," presented by the author, the Rev. Thomas Parker Boyd; "The Mediator," presented by Miss Anna Manning, and "The Last of the Plainsmen," presented by Mr. Alden Sampson. Mr. Charles Raas presented a photograph taken at the time of the dedication of the Lodge.

The eighteen oak chairs, gift of Mr. James Mills of Riverside, were sent to the valley in May and duly installed in the Lodge. These fine substantial chairs add much to the appearance of the interior and it is hardly necessary to say are very useful.

The herbarium, though incomplete, proves of great interest. A few specimens properly mounted and labeled were added and about a hundred and twenty-five specimens will be ready to send in with the Custodian next year. The work of collecting and pressing these flowers was done by Miss Helen D. Geis, of Los Angeles, who generously gave much of her time to the work during a month's stay in Yosemite. The thanks of the Club are due her and also Dr. H. N. Hall, of the University of California, who very kindly named the specimens collected.

In order that this collection may be most accessible and at the same time not suffer from constant handling, Mr. Alden Sampson suggested the purchase of an apparatus for holding the herbarium and generously started a subscription for that purpose; the apparatus to consist of panes of glass framed and so hung that the leaves can be turned. Thus the specimens can be seen easily and at the same time protected from dust and the wear and tear incident to handling.

The Sierra Club is greatly indebted to Major Forsyth for his unfailing kindness and courtesy and for his very efficient assistance on many occasions; to his assistant, Mr. Sovelewski, and to Mr. and Mrs. David Curry, who, in the capacity of neighbors to the Lodge, constantly served the interests of the Club and extended many favors to the Custodian.

Respectfully submitted.

LYDIA ATTERBURY.

Since the closing of the Lodge for the season of 1909, further subscriptions have been made to the fund started by Mr. Alden Sampson to purchase a holder for the herbarium. It now stands at \$18.00 and the Committee believes that about \$30.00 will procure the set of holders as planned. A few additional subscriptions will enable the Committee to send it in with the Custodian for 1910.

The following books have been added to the Lodge library since the closing of last season and will go into the Lodge for the coming season:

THE WOODSMAN'S HANDBOOK, Part I . . .	Henry Solon Graves
ZERMATT AND THE MATTERHORN . . .	Edward Whymper
BIG TREES OF CALIFORNIA . . .	Galen Clark
LIST OF PLANTS, YOSEMITE REGION . . .	Ora Boring
FOREST TREES OF THE PACIFIC SLOPE . . .	Geo. B. Sudworth
SCRAMBLES AMONGST THE ALPS, 1860-69 . .	Edward Whymper
APPALACHIA, Vol. XI.	
SIERRA CLUB BULLETIN, Vol. VI.	

Other contributions to the Lodge library will be welcomed and sent in with those already in hand.

The maintenance of the Lodge is without doubt one of the most noteworthy and useful activities of the Sierra Club, and the Committee deems it worthy of the liveliest interest and heartiest support of every member.

Respectfully submitted,

E. T. PARSONS, *Chairman*,

J. N. LE CONTE,

LYDIA ATTERBURY,

Le Conte Memorial Lodge Committee.

NOTES AND CORRESPONDENCE.

In addition to longer articles suitable for the body of the magazine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations, together with brief comment and suggestion on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, fish, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sierra Club is Room 302 Mills Building, San Francisco, where all Club members are welcome, and where all the maps, photographs, and other records of the Club are kept.

The Club would like to secure additional copies of those numbers of the SIERRA CLUB BULLETIN which are noted on the back of the cover of this number as being out of print, and we hope any member having extra copies will send them to the Secretary.

THE DUKE OF ABRUZZI IN THE HIMALAYA.

On July 18, 1909, the Duke of Abruzzi succeeded in getting within 200 meters of the top of Bride Peak (Conway) in the Himalaya Range. He reached an altitude of 7400-7500 meters, about 24,500 feet, but bad weather prevented reaching the summit.

This appears to be a record as far as altitude is concerned.—*Note from the Alpine Journal, November, 1909.*

NEW TOPOGRAPHIC MAPS.

An administrative map of the entire Yosemite National Park and also the Mt. Goddard quadrangle, which includes the Palisade Region of the headwaters of the South and Middle Forks of the King's River, will be issued this year by the U. S. Geological Survey. These sheets will complete the topographic work covering the High Sierra. This has been a splendid piece of work and the topographic branch of the service is entitled to great credit.

TO PROTECT THE MT. RAINIER PARK.

WASHINGTON, January 3.—Senator Piles to-morrow will introduce, at the instance of the Mountaineers and Seattle Commercial Club, a bill authorizing the Secretary of the Interior to call on the Secretary of War for troops to patrol the Mount Rainier National Park.

EDITORIAL NOTE.—Members of the Sierra Club are urged to assist in having this commendable bill passed by writing to their Senators and Representatives.

KERN RIVER TRAILS.

The new Rattlesnake trail from Mineral King to Kern River was completed last fall. This trail runs from Mineral King past Lady Franklin Lake, over one divide and down to Kern River, striking the cañon between Upper and Lower Funston Meadows. The entire length of the trail is thirteen miles. Construction on a new trail connecting Redwood Meadows with the headwaters of Roaring River, which will greatly facilitate travel between the King's and Kern regions, is said to have been commenced.

MONO-TIOGA HIGHWAY.

The new State road from Mono Lake to Tioga Lake was completed last summer and is reported to be a monument to the skill of the State engineers. It has a maximum grade of seven per cent, and is a good road for automobiles. The old Tioga road, which connects the new road with Crockers and the San Joaquin Valley, should be repaired without delay, so as to afford one of the most wonderful trans-mountain trips in the world. This road runs through the Tuolumne Meadows, and when made accessible to automobiles will open up to tourist travel a park land embracing some of our finest mountain scenery.

GOLDEN TROUT.

Public-spirited citizens of Bishop, Inyo County, did some very creditable fish transplanting last fall. Several cans of golden trout were caught in Whitney (Golden Trout?) Creek and taken via Lone Pine to the headwaters of the Middle Fork of the King's River. We are just beginning to realize the importance of stocking as many lakes and streams as possible with this the most beautiful and gamy of all of our fresh-water fish. Next summer, while on our Annual Outing, we plan to transplant golden trout from the Kern to the South Fork Basin of the King's River.

KING'S RIVER, MONO LAKE, AND OTHER STATE HIGHWAYS.

SACRAMENTO, CAL., January 8, 1910.

In the connection of the King's River road, we have encountered heavy rock beneath the surface of the ground which has set us back in the progress on this job. I hope, however, to get started early in the spring and next year have the road well beyond the ten-mile crossing. We have, during the last year, opened the Mono Lake Basin road, so that it is now passable for teams going over the Tioga road to the Yosemite National Park. This coming summer we will improve this road.

During the past year we have also put the Emigrant Gap road in passable shape for vehicles. We hope to get this road in fair shape the coming summer.

I can also state for your information that we have undertaken the sprinkling of the first twelve miles on the western end of the Lake Tahoe State road and hope this summer to have this work of keeping the dust down in very good shape. On the Sonora and Mono State road, I will state that we are gradually getting this highway in fairly good shape. It has some very steep grades which cannot very well be obviated, but the past summer I traveled this road in an automobile, the first, I believe, that has gone over the Sonora Pass. However, I expect to have this road open next spring to this sort of travel.

Trusting that this bit of information may assist you in what you want, I am,

Very truly yours,

N. ELLERY,

State Engineer.

To Mr. Wm. E. COLBY,
San Francisco, Cal.

A NEW ARTICLE OF DIET FOR SIERRA TRAMPS.

September 2, 1909.

I wish to introduce to the tramping members of the Sierra Club, who worship the creed of "How to Go Light," a new article of diet—Swedish bread. To those who already know Swedish bread no more need be said. To those who do not, but who know Italian galetta, I will say that the Swedish bread beats the galetta.

It is made in the form of a flat disc about ten inches in diameter by about one eighth of an inch thick. It is shaped like the Jewish Passover unleaven bread—matzos,—but the Swedish bread beats the matzos from the palate's point of view about a thousand to one.

The Swedish bread has seasoning and is appetizing. It has some elasticity and is easier on the teeth than galetta. It is nourishing and self-sufficient.

The only objection to it is its shape, but when broken up it is equally grateful and chewable. It is said to retain its freshness indefinitely. There are several kinds. What I tried was the Swedish rye bread.

A MEMBER.

EDITOR'S NOTE.—Swedish bread has been in use on the Club Outings for several years. In 1909 a hundred pounds were consumed. The rye and whole wheat have been found the most satisfactory of the three varieties on sale here. The use of caraway seed makes its objectionable to some, but doubtless if a sufficient demand for it arose this seed could be eliminated.

NATIONAL PARKS AND RESERVATIONS.

(From Report of the Secretary of Interior, 1909.)

My inspection of the Yellowstone and Yosemite National Parks during the past summer convinces me that the Government should adopt a more advanced policy respecting their maintenance, improvement, and operation.

(1) A continued extension of roads, trails, and structures for public travel and convenience are required to enable the tourist to obtain the benefits of the scenic beauties of these natural playgrounds—the most wonderful in the world.

(2) These parks have ceased to be experimental as to the operation of transportation lines, hotels, and other concessions, because of the steady stream of travel frequenting them, and the large profits in most cases should require the devotion of a reasonable share thereof to the maintenance of the parks.

I have therefore determined to impose upon all the concessionaries, so far as existing contracts will permit, a franchise or use tax, based upon their gross earnings, for the enlargement of the maintenance fund, and where new leases are executed, to advance the rental and franchise charge proportionate to the privilege enjoyed. A definite system of accounting and inspection will be installed for the Government's protection in this behalf.

The system of maintaining regular troops in the Yellowstone and Yosemite parks is a highly satisfactory method of patrol. The moral effect and the saving of expense in administration alone justify their assignment.

As to the park roads, I would recommend that future appropriations for their construction and maintenance be given to this department for disbursement rather than to the War Department, thus clothing the Interior Department with their control and supervision.

In the Yosemite National Park special attention is directed to the necessity for the establishment of a permanent water and drainage system to protect the health of the tourists and campers, and those stationed in the park. A board of government experts should be selected to submit proper plans for solving this pressing problem.

It is also advisable, as this is an "all-year" park, to establish a permanent military post in the park, instead of the temporary camp maintained during the summer months. The satisfactory enforcement of park regulations can be carried out in no other way.

I would also urge that Congress authorize the acquisition of private holdings in this park of both lands and toll roads. The large private fenced areas in which cattle are grazed require con-

stant supervision because of breaches of regulations. The private lands containing merchantable timber, if logged off, would greatly mar the beauty of the park.

None of the hotels or public convenience structures in the park are adequate for the accommodation of the tourists, or are in keeping with the scenic surroundings. They are old frame structures of the "wayside inn" type. I would favor the erection by the Government of a permanent tavern or hotel on the floor of the Yosemite Valley cañon and one at Glacier Point, to be leased for reasonable periods.

The electric plant should be condemned as unsafe and a new one installed.

As above stated, private toll roads should be extinguished, and all roads in the park placed under the control of and maintained by the Government. Extensions of road construction are important to give the public easy access to many of the natural wonders of the Yosemite and its adjacent valleys, such as the Hetch Hetchy, and Grand Cañon of the Tuolumne, and a new road is feasible and most desirable along the south crest of the valley cañon to Glacier Point.

YOSEMITE NATIONAL PARK.

(From Report of the Superintendent of the Yosemite National Park, 1909.)

Fish.—Forty thousand rainbow trout were received from the Wawona hatchery, 30,000 of which were placed in the Merced River and 10,000 in Tenaya Creek, all in Yosemite Valley. From the Sission hatchery 20 cans of Eastern brook and 12 cans of rainbow trout were received, and 12 cans of Eastern brook were placed in Lake Tenaya, the rainbow in the Merced in Yosemite Valley, and the remainder in Crescent Lake and waters in that vicinity.

Telephone Service.—The telephone service has been extended, repaired, and improved, 47 miles of line being built, and the following outposts are now in telephonic communication with the Yosemite Valley: Wawona, Mariposa Big Trees, Merced Big Trees, Crane Flats, Hog Ranch, Hetch Hetchy Valley, and Lake Eleanor. There are only three not in telephonic communication: Aspen Valley, Buck Camp, and Soda Springs, but the line will be extended to them early next season. The administration and control of the park has been much facilitated by the telephone system, which has also proved a great convenience to the public.

Roads, Trails, and Bridges.—The need of a good highway from El Portal, the terminus of the Yosemite Valley Railroad, up to the Sentinel Hotel in the Yosemite Valley, still overshadows all

other needs of the park. The construction of a new Telford-macadam road from El Capitan Bridge to the Sentinel Hotel, along the south side of the Merced River, is now progressing under an allotment of \$34,100, part from revenues and part from the regular appropriation, a percentage contract having been entered into with Carter & McCauley therefor. The road from El Portal to Pohono Bridge is still so rocky, dusty, narrow, tortuous, and precipitous as to make a drive over it a painful ordeal. All the roads should be widened, metalled, and watered, and in that order, though if the widening and metalling are to be indefinitely delayed it would be well to expend a few thousand dollars in watering the roads as they are.

The road from El Portal to the middle of the Yosemite Valley is about 15 miles long, half of which, when the work in progress is completed, will be a very excellent road. The other half should as soon as possible be widened, straightened, improved in grade, metalled, and watered. In addition to the above there are about 15 miles of roads on the floor of the valley that are dusty and rocky and should be rebuilt, parts of them being relocated in order to follow more scenic routes.

Visitors.—Between November 1, 1908, and April 30, 1909, there were 1,329 visitors to the Valley, and between May 1 and September 30, 1909, there were 11,853 visitors to the park, of which number 471 did not come to the valley, an aggregate of 13,182, representing an increase of 50 per cent over the previous year.

THE NEGLECT OF BEAUTY IN THE CONSERVATION MOVEMENT.

Although the declaration of the first White House Conference of Governors included a record of their agreement "that the beauty, healthfulness, and habitability of our country should be preserved and increased," it is much to be regretted that the official leaders of the conservation movement—than which nothing is more important to the country—have never shown a cordial, much less an aggressive, interest in safeguarding our great scenery, or in promoting, in general, this part of their admirable program. When the Appalachian Park reserve was first proposed, a prominent member of Congress embodied his objection to it by saying bluntly, "We are not buying scenery." To meet this criticism, the friends of the bill, instead of boldly insisting upon the value of great scenery, chose to lay stress exclusively upon the material and economic side of the whole movement. The fact is, there is no more popular and effective trumpet-call for the conservation movement than the appeal to the love of beautiful natural scenery. In this matter the idealists are more practical than the materialists, whose mistake is that they never capitalize sentiment. A

money valuation of the uses of our great natural scenery, attracting, as it does, a vast number of summer sojourners and the traveling public in general, would make an astonishing showing.

It could easily be proved that the fear of offending the "hard-headed" and "practical" man by such an appeal is without foundation. The first thing that a man does after he obtains a competence is to invest his money in some form of beauty, and it is in the interest of good citizenship that he should have a plot of ground to be proud of. He settles in some town, suburb, or other region mainly because it is beautiful, and he is all the happier if his home can command an attractive natural view. As he grows richer, this desire for beautiful things, and particularly for a beautiful country-place, becomes more dominant, and it is to such a feeling that we owe the development of our sea-coast and hilltops into regions of resort for health and recreation. The American still apostrophizes his country with the lines:

I love thy rocks and rills,
Thy woods and templed hills,

and he is not willing that this sentiment shall be changed to read:

I love thy stocks and mills,
Thy goods and crumpled bills.

It must always be held as a blot upon the lustrous record of the Roosevelt Administration in conservation matters that, in deference to the false sense of what is practical, and moreover, by a strained construction of law, it gave away a large part of the people's greatest national park for a city's reservoir, confessedly without the slightest inquiry as to the necessity of doing so. The contention that in fact this necessity does not exist was confirmed when the leader of the scheme acknowledged before the Senate Committee on the Public Lands that San Francisco, without invading the Park, could get an abundant water-supply from a number of other regions by the simple, though sometimes inconvenient, process of paying for it!

The time has come when, if much of what has been gained by the reservation of our great natural monuments is not to be lost, the public must make known its wishes to Congress. The scheme for the dismemberment of the Yosemite National Park, which a year ago was temporarily checked, is to be pushed during the present session. In this contest the recent visit of President Taft to the Yosemite and that of the Secretary of the Interior to the Hetch Hetchy will strengthen the defenders of the latter valley, for no one can view the phenomenal beauty of these Sierra gorges without feeling a solemn responsibility for its preservation. Even the San Francisco promoters of the destructive scheme



THE HETCH HETCHY VALLEY.—"THE TUOLUMNE YOSEMITE."—YOSEMITE NATIONAL PARK.

From photograph by J. F. Kinnaman.



A GLIMPSE OF THE PARK-LIKE FLOOR OF HETCH HETCHY VALLEY.

From photograph by J. N. Le Conte.

threw up their hands in admiration as they caught sight of the Hetch Hetchy, and confessed that "something was to be said for the esthetes, after all." And yet they profess to believe that water is "running to waste" if it be simply looked at! And this is said of streams which, after they have been looked at, may be utilized for the irrigation of the great San Joaquin lowlands.

Movements to safeguard Niagara and the Hudson are also impending, and in this connection we respectfully commend to Senators and Representatives, as well as to the members of the New York Legislature, these judicious words of Governor Hughes, spoken at the dedication of the Palisades Interstate Park:

"Of what avail would be the material benefits of gainful occupation, what would be the promise of prosperous communities, with wealth of products and freedom of exchange, were it not for the opportunities to cultivate the love of the beautiful? The preservation of the scenery of the Hudson is the highest duty with respect to this river imposed upon those who are the trustees of its manifold benefits. It is fortunate that means have already been taken to protect this escarpment, which is one of its finest features. The two States have joined in measures for this purpose. I hope this is only the beginning of efforts which may jointly be made by these two commonwealths to safeguard the highlands and waters, in which they are both deeply interested. The entire watershed which lies to the north should be conserved, and a policy should be instituted for such joint control as would secure adequate protection."

But it is not merely the colossal beauty of the Sierra, Niagara, and the Hudson that should be preserved and enhanced, but the beauty of city, town, and hamlet. What is needed is the inculcation, by every agency, of *beauty as a principle*, that life may be made happier and more elevating for all the generations who shall follow us, and who will love their country more devotedly the more lovable it is made.—*Editorial, Century Magazine, February, 1910.*

APPALACHIAN FORESTS.

Sooner or later the forests of the Appalachian Mountains must be taken under government control. That has been a foregone conclusion for the past ten years. It has only been a question of how soon public sentiment would be aroused to the point where it would insist upon the adoption of the principle, and so inspire Congress to action. Through the interest which has been aroused by the campaign for conserving our natural resources the people of the nation have been learning some very forcible economic

truths during the past year or two. Among other things, it has become apparent that forests, and especially mountain forests, are of value, not for their timber alone, but to a far greater extent as reservoirs of water to regulate the flow of our streams.

The people of the Pacific Coast and the Rocky Mountain States were among the first to appreciate this fact, and to them has already come the benefit of government regulation of their mountain forests. Now the East has learned its lesson, too. It has awakened from its ignorance, and is eager to protect itself against the evils that it perceives to be imminent if unrestricted timber slashing continues on the headwaters of its important rivers.

This is not a matter which concerns New England and the South alone. It is a national calamity which is threatening, for if this nation is a unit, that which affects the integrity and prosperity of a substantial percentage of its area must be of consequence to the whole. Certainly it is that in no sense can this problem of conserving the Appalachian forests be regarded as a local affair. The East has cheerfully done its part to aid the West in protecting its forests and its waters. It now appeals to the West for assistance to conserve the same resources on the other side of the continent. The East is not asking something for nothing; it does not ask the nation to shoulder the whole burden, and it does not ask for special legislation devised to solve the problems of a single section.

The Eastern and Southern States must help themselves under the terms of the so-called Weeks bill if they would have the nation lend its aid. It is seldom that Congress is asked to enact a bill so thoroughly national in its scope as is this bill which has been introduced by Mr. Weeks of Massachusetts. Its terms are applicable to all portions of the country wherever streams of interstate importance rise in the midst of privately owned forests. It is not improbable that the West itself may need to invoke its powers at some future time, for not all the mountain forests in the Rockies, the Sierra, and the Cascades are included in the national reserves. Neither is it a confiscatory measure, nor one likely to discourage private enterprise. It is the mildest and the sanest piece of socialistic legislation that has been drafted in a long time. In short, it plans to furnish the minimum of government interference, and that in a way which is well calculated to stimulate private endeavor through the fostering of the very resources on which such endeavor must depend for its success.

The one feature of the Weeks bill which met with Western opposition in the last session, where it was first introduced, has been eliminated from the draft which is before the present Congress. Western members objected to the use of the proceeds of the existing national forests for the acquisition of others in the

East. That has now been changed so that a direct treasury appropriation is required to cover such part of the co-operative work as the national government may find it expedient to share. Neither need it be feared that gigantic jobbery can be promoted under this measure. The nation's interests are hedged about with formidable safeguards. Not a cent can be expended from the national purse in this work until the most careful inquiry has been made by thoroughly qualified government officials into the economic public necessities involved. The facts produced by this inquiry must be then submitted to a special board consisting of the Secretaries of Agriculture, the Interior, and War, a Senator, and a Congressman. This board must in every case pass upon the question of public necessity, and must further determine to what extent the Federal government will be justified in extending its co-operation. In short, it is an eminently safe measure, and one that should appeal powerfully to strictly national interests.

The practically solid opposition in the last Congress by the representatives from the far West was most disheartening to the promoters of the measure, despite the fact that the bill passed the House in the face of all those negative votes. Had time allowed for full discussion in the Senate, it could doubtless have passed that chamber also, but final adjournment came before the bill was reached. With the omission of what was understood to be the chief cause for Western opposition, the East hopes to see the bill adopted this year by an overwhelming majority.

ALLEN CHAMBERLAIN.

EDITOR'S NOTE.—Members of the Sierra Club are urged to write to their Senators and Representatives in Congress requesting favorable action on this bill, which means so much to our friends of the Appalachian Mountain Club as well as to the entire nation.

SIERRA CLUB PINS.

A very attractive Sierra Club pin is on sale at the office of the Secretary. The price in silver or bronze is \$1.00; and in gold, either as a pin or watch-fob, \$3.50. The gold pin is only made to order. Those desiring to have a pin sent by registered mail should send to the Secretary of the Sierra Club ten cents in addition to the above-mentioned price.

SIERRA CLUB STATIONERY.

The official die of the Sierra Club is now at store of Paul Elder & Co., 239 Grant Avenue, San Francisco, who are prepared to execute orders for Club stationery.

FORESTRY NOTES.

EDITED BY PROFESSOR WILLIAM R. DUDLEY.

MUNICIPAL
FORESTS.

Pennsylvania, by the passage of a bill during the recent legislative session, has made possible the establishment of municipal forests adjacent to its towns and cities. The bill is entitled: "An Act to permit the acquisition of forest or other suitable lands by municipalities, for the purpose of establishing municipal forests and providing for the administration, maintenance, protection and development of such forests." The bill was presented and especially advocated by the American Civic Association, and Dr. Rothrock, the State Forester, says the State is indebted to the President of the Association more than to any other one man for its introduction and passage. Although the principle is new to America, except in sporadic cases, it has been long developed into a system in all the states of Continental Europe, where such forests are known as communal forests, and are managed with great thrift and economy, sometimes by men chosen by the communities, sometimes by the government forest service in the interest of the community. A Pennsylvania Forest Commissioner reports some instructive details from the government reports on the forests of Baden which is more richly forested than most German states. Somewhat more than one-third of Baden is forested. 577,465 acres,—less than one-half the total forested area,—are owned by communities and corporations, such as churches, schools and hospitals. Indeed, 1350 of her 1564 communities own forests, and 287 corporations, such as above named, also have woodlands to manage. The forests are systematically examined and a definite amount is allowed to be cut yearly, which is well within the yearly renewal from growth. These woodlands are a source of sure profit. The city of Baden has 10,576 acres, which yields a net profit of \$6.25 an acre yearly. Freiburg owns 8,085 acres, yielding a profit of \$5.79 an acre. The profits of Heidelberg are less, because Heidelberg is still acquiring forest land. Case after case could be cited where the entire public expenses of the community are met by the yearly profits on the woodlands, and some even derive a surplus sufficient after a time to build water-works and the like. For instance, the village of Aufen, with only 220 inhabitants, owns 163 acres of woodland. "This gives 2,000 board feet of firewood to each citizen, and 85,000 board feet of timber sold nets more than \$1,400, which is sufficient for all

expenses of the little community." In these European communities the question of municipal ownership is so well settled there is but one side to it. In America we spend a tremendous amount of mental energy in discussing the academic question, only to arrive at the conclusion that we are not honest enough for such ownership, and it must be confessed that where municipal ownership has been put to the test it has not always developed the sense of responsibility hoped for.

CHAPMAN ON STATE
FOREST POLICY.

Such a belief in the ultimate effect of responsibility upon politically elected State officers of a high rank certainly influenced the men who drew up the State forestry law of California five years ago. They showed such confidence in their belief that they left the appointment of Warden of the California Redwood Park unguarded against political interference, although the selection of State Forester was carefully protected from it. There is no question, however, but the California Board of Forestry, made up of the Governor, the Secretary of State and the Attorney-General, is essentially a political body. As executive officer the Forester is made a member of the board. Professor H. H. Chapman, of the Yale Forest School faculty, has been closely following for some years the practical working of the forest laws adopted by the various States. This subject enters into his course of instruction at Yale. He writes the results of his observations in *Conservation* for August, and touches upon the composition of forestry boards: "A progressive forest policy for a State calls for absolute freedom from political connections and for direction by men of proper training and knowledge of forestry. The experience of some States has indicated the best method of securing an efficient and non-political management of forest reserves. . . . This board should be composed of men occupying positions of responsibility in the State, in educational or technical lines; as for instance, the President of the State University, Director of State Geological Survey, Professor of Forestry in some well-known institution. Five members should make a large enough board."

This is a conclusion quite opposed to the California plan; and we regret to say that California may have furnished the author with one fact on which to base his statement, as the present Board of Forestry promptly displaced the excellent warden of the Redwood Park, trained under the first commission and under Governor Pardee's board, for a purely political appointee. This transaction has created a great amount of irritation among the frequenters of the Park and it is safe to say that it has greatly discredited the State forest policy among the people. This is

very deeply regretted by many citizens who care little for personal politics of office-holders, but very much for their clean, efficient work as representatives of our republican form of government.

As it is, the record of our elected boards will not compare favorably with the management of their woodlands by the representatives of any German community or city. America is forced, according to Mr. Chapman's judgment, to turn away from officers elected by the people, to a choice carefully restricted by law to certain small classes characterized by integrity rather than business or civic training. This complete reversal of the conditions to be expected under a monarchy and under a republic would be amusing did it not bring unpleasant reflections to the republican.

The most unfortunate omission in the California law was the failure to include on its board any members who might be supposed to have especial knowledge of public parks and a love for trees. Perhaps we think of a forester as endowed with these qualities. He may have them, but his training and profession like that of an engineer do not require them. He is a forest lawyer and lumberman's adviser, furnished by the schools, with expert knowledge how to bring the greatest profit to the owner of the forest. This means inevitable destruction of tree life, but in such a manner that another crop will grow again after the lapse of many years. The purpose of the California Redwood Park, a considerable item in the management of the board, was "to preserve the species known as *Sequoia sempervirens*," in the words of the act of purchase, and the design of this and every public park is to meet an aesthetic desire on the part of the people and to furnish them with ground for play, rest and recuperative purposes. Pecuniary profit out of any portion of such a park is the last thing thought of. Public expenditure is expected, and profit is returned to the people through pleasure in the scene and improvement in health and contentment,—things of as much practical importance to all the people of our cities as the getting of money. To make such a park successful and satisfactory there should be an influential element on the board of management, with a sympathetic understanding of parks and their purposes, and willing to devote considerable unremunerated time to their improvement and protection.

PLANTING WORK ON
NATIONAL FORESTS IN
CALIFORNIA.

The Forest Service has planned to establish a coniferous nursery on the Shasta National Forest, the capacity of which is designed to be 500,000 transplants per year. The stock-produced here is to be used in experimental

planting on the timber forests of the north. Approximately 5,000 pounds of sugar-pine and yellow-pine seed have been collected the past season for conducting sowing experiments. The great problem on the timber forests lies in the replacement of chaparral which has taken possession of immense areas of potential timber land following fire. In connection with the experimental work on the Shasta National Forest, experiments will be made with many of the broad-leaved species of the East for the purpose of ascertaining whether some of them can be successfully grown on certain favorable situations.

In the southern forests experiments are still being perfected for the purpose of determining the advisability of planting for watershed protection. At the same time certain areas which seem suited to growing eucalyptus are being planted up. Nurseries for the propagation of both coniferous and eucalyptus stock are located on the Angeles, Cleveland, and Santa Barbara national forests.

FIRE LOOKOUT STATIONS IN SIERRA.

Several months ago a lookout station was established on Shuteye Peak in the high Sierra for the purpose of watching for any fires which might occur in the mountains. This peak has an elevation of 8,858 feet, and the observer commands a view of a large portion of Tuolumne, Madera, and Fresno counties. A cabin was constructed at the top of the mountain and a telephone line installed which connects with the Forest Supervisor's office in the valley and the various ranger stations on the Sierra forests. The observer is equipped with powerful field glasses, and when a fire is discovered news is instantly telephoned to the nearest ranger.

During the short time the station has been maintained its usefulness has twice been demonstrated by the discovery of fires in remote localities. These were readily extinguished before they could gain dangerous headway, thus saving valuable timber and forage which might otherwise have been devastated had not the fires been discovered in their incipency. The Forest Service is planning to establish several other similar stations in the Sierras which will virtually command the entire range of mountains, and thus largely remove the necessity for constant patrol on the part of the rangers scattered throughout the hills. Much of the rangers' time can now be devoted to trail and other improvement work without interfering with their availability for fighting fires, and the nervous strain under which many of the men labored when constantly patrolling has been materially reduced.

**GOAT-GRAZING
EXPERIMENTS.**

A unique experiment was begun last season on the Lassen National Forest to determine whether goats could successfully subdue chaparral areas, with a view to reforesting them by planting or natural processes.

Throughout the national forests of California there are large areas of land formerly timbered which have been repeatedly burned over and which are now densely covered with brush or chaparral. A contract was entered into with a local owner of Angora goats, in which he agreed to control the grazing of the animals on certain chaparral areas within the Lassen Forest in a manner prescribed by the Forest Service, in return for which free grazing was allowed by the Forest Service.

Trails were cut across the chaparral tracts, and the goats herded along these trails, from which they would feed in either direction. The goats nibbled the bark of the manzanita and other chaparral species, in time completely girdling them. The experiment must be carried over a term of years to determine the full results, but from the observations made this season, it is confidently expected that in two or three years chaparral areas may be completely subdued in this manner. This would pave the way for natural reforestation or planting.

RANGER SCHOOL.

A school for forest rangers was held at Hot Springs during the months of September and October, one ranger from each of the seventeen national forests in the State being present, for the purpose of teaching the rangers every phase of the work which they might be called upon to perform.

About four weeks were devoted to instructions in the form of field demonstrations and lectures by representatives from the district office at San Francisco and Washington, D. C., who are in charge of the various lines of forest work.

The rangers attending showed great interest in the school, and it is felt that they got a great deal of good out of it, and the knowledge which they have thus gained will fit them for much more effective work along all lines.

It is planned to hold these field schools annually, and thus eventually fully instruct most of the permanent rangers on the forests in all phases of their work.

BOOK REVIEWS.

EDITED BY WILLIAM FREDERICK BADÈ.

PUBLIC RECREATION AND PLAYGROUND FACILITIES.

The American Academy of Political and Social Science will soon publish a special volume on this topic, and all interested should write them at West Philadelphia Station, Philadelphia, for information as to terms on which it may be obtained.

E. T. P.

"THE WORLD'S HIGHEST ALTITUDES AND FIRST ASCENTS."

A most readable article by Prof. Charles E. Fay (ex-president of the Appalachian Mountain Club and of the American Alpine Club), remarkably well illustrated and descriptive of the highest peaks in all parts of the world.

National Geographic Magazine, June, 1909.

W. E. C.

"THE MOUNTAIN TRAIL AND ITS MESSAGE."

The Reverend Albert W. Palmer delivered an address in the First Congregational Church of Oakland recently under the foregoing title. To those present it was truly a message of uplift and strength, and the possessor of a copy of it in print values it highly. It was written by a man who understands to those who understand, and to quicken the perception of those who hasten heedlessly over "The Trail."

E. T. P.

"A SKETCH OF THE GEOGRAPHY AND GEOLOGY OF THE HIMALAYA MOUNTAINS AND TIBET."*

This book covers the tremendous field indicated by its title and furnishes the most recent and authoritative collection of data on this, as yet little known, wilderness containing the highest peaks on the globe. The work was done by Col. S. G. Burrard and H. H. Hayden and published by order of the Government of India. It is divided into four parts: Part I.—The high peaks of Asia. Part II.—The principal mountain ranges of Asia. Part III.—The rivers of the Himalaya and Tibet. Part IV.—The geology of the Himalaya. Three peaks are reported as exceeding 28,000 feet in altitude: Mt. Everest, 29,002; K², 28,250; Kinchinjunga I, 28,146, and 75 peaks exceed 24,000 feet. The present-day mountaineer surely cannot sigh for more worlds to conquer.

W. E. C.

*Sold at the office of the Trigonometrical Surveys, Dehra Dun, India. Price, 8 rupees.

"PEAKS AND GLACIERS
OF NUN KUN."

A new book by Fanny Bullock Workman and William H. Workman, members of the American Alpine Club and the Appalachian Mountain Club, is called "Peaks and Glaciers of Nun Kun."*

The book is a record of mountaineering and pioneer exploration in the Punjab Himalaya, and also gives the account of Mrs. Workman's ascent of Pinnacle Peak, 23,000 feet, which is the record ascent for women. The descriptions of the Nun Kun group of mountains, unknown before this to mountain-climbers, the account of the peculiar difficulties encountered in the ascent, not only from snow and ice and rocks, but also in handling the native porters, makes a most interesting and, at times, thrilling story.

The book contains a map and ninety-two superbly reproduced illustrations taken from photographs and showing remarkably beautiful and interesting views of the peaks, glaciers, and valleys explored.

"THE TREES OF
CALIFORNIA."†

This is a book that has long been needed by the tree-loving people of California. Dr. Jepson is particularly qualified to write such a book, and has spent years of painstaking labor in its preparation. He has treated a technical subject in a most entertaining manner, and the book is replete with splendid full-page illustrations and smaller descriptive cuts. California has a reputation for "big things," but few of its own inhabitants are aware that "the silva of California is remarkable for the number of species peculiar to California or which here attain their greatest development," and that "California is most remarkable for its development of coniferæ, not only in number of species (which exceeds any other equal area), but in size of the individual trees and their forestal development. This statement is particularly true of the true pines, of which we have seventeen species." The book is intended not only for the practical forester and botanist, but also for the amateur and those "who have opportunity to take up special studies of our trees for the sake of intellectual pleasure and cultivation." The book will prove an invaluable companion to all who love our forests and mountains. W. E. C.

"HISTORY OF THE STATE
OF WASHINGTON."

In his latest book Professor Meany has left the rather restricted scope of the commentator for the wider field and broader outlook of the historian. His "History of the State of

* *Peaks and Glaciers of Nun Kun*. Illustrated maps. \$4.50 net. Charles Scribner's Sons, New York, 1909.

† *The Trees of California*. By WILLIS LINN JEPSON. Cunningham, Curtis & Welch, San Francisco. \$2.50.

Washington"* is a comprehensive and interesting record of that part of Old Oregon which in 1853 became, not Columbia Territory as was first suggested, but the Territory of Washington. The book is divided into five parts, including the Period of Discovery, the Period of Exploration, of Occupation, Territorial Days, and Statehood. While the later part treating of more recent days will be of especial interest to Washingtonians, the general reader will probably find greater satisfaction in the chronicle of early days when Oregon was jointly occupied by Americans and English and the Hudson Bay Company practically dominated the situation. The story of the early explorers, of the fur traders, of the Indian wars—particularly the story of the slow-moving march of the pioneers, cannot fail to stir the reader who has Western blood in his veins, for it is a part of our great epic of the West.

M. R. P.

"THE COLUMBIA
RIVER."

Running water, with its unending, restless striving towards unknown goals, has for many of us a certain mysterious allure, rivaled perhaps, among all the forces of nature, only by the tides of the sea. The child who sets his fragile play-craft adrift in the wayside gutter, the fisherman in whose ears the song of the river rings all through the city-bound months of the year, the poet who finds his inspiration in the onward rush of mighty waters—are but a few of those who confess themselves subject to its charm. And so to many readers William Denison Lyman's recent book, "The Columbia River,"† will make instant appeal. Professor Lyman has developed his theme with a sympathetic and wonderful charm. The first part of the book tells the story of the river as far as we can trace it—the legendary lore of Indian days, the early discoveries by sea and land; the days of the fur trader, the voyageur, the missionary, when the Hudson Bay Company's word was law in Old Oregon; the pioneer era and its influence in gaining Oregon for the American flag; and finally the marvelous change from the unknown, untraveled river of the wilderness to the busy highway of the alert and fruitful Inland Empire. Following this stirring narrative is a description of the whole length of the mighty river from its birthplace in the Canadian Rockies down through the beautiful lake region and the "land of wheatfield, orchard and garden," and the picturesque grandeur of its cleavage of the Cascade Range at the Dalles to the point where it slips past the historic old town of Astoria to lose

**History of the State of Washington.* By EDMOND S. MEANY. Published by the Macmillan Company, New York, 1909.

† *The Columbia River.* By WILLIAM DENISON LYMAN. G. P. Putnam's Sons, New York, 1909.

itself in the ocean. Mountain lovers will revel in the splendid photographs and take particular pleasure in the chapters describing the lakes and the snow peaks.

M. R. P.

"VANCOUVER'S DISCOVERY OF PUGET SOUND." The State of Washington is fortunate in numbering among its citizens a man whose careful and earnest research is rescuing from oblivion many interesting facts of its early history. "Vancouver's Discovery of Puget Sound,"* a recently published volume by Mr. Edmond S. Meany, professor of history at the University of Washington, is a unique compilation of the life stories of the men in whose honor so many of the geographical features of the Sound region were named. A brief review of the political situation and biographies of Captain George Vancouver and of the most prominent Spanish voyager, Don Juan Francisco de la Bodega y Quadra, introduce the reader to the scene and the principal actors; and a reprint of portions of Captain Vancouver's original diary is the vehicle chosen for the narrative of the discovery. Professor Meany, however, has added much interest to the recital by the light thrown, not only upon the principal characters, but upon every person whose name figures in the diary and upon the charts of the voyage. It is interesting to find that many of the best known features of the Northwest, Mt. Baker, Puget Sound, Whidbey Island, etc., were named for the men who suffered so many hardships and privations on the good ships "Discovery" and "Chatham," and that Vancouver honored his trusted and tried subordinates quite as often as he did the noble Lords of the Admiralty at home. Vancouver states that it was difficult to learn any fixed names that the Indians had bestowed. We may regret that the name of Kulshan, the Great White Watcher, had never come to his ears when his lieutenant, Baker, was so signally honored, but we cannot but rejoice that Lieutenant Peter Puget appeared upon the scene in time to save one of the beautiful gulfs of the world from its ancient cognomen, Whulge.

M. R. P.

"THE GRIZZLY BEAR" Very few of the year's out-of-door books can equal Mr. William H. Wright's recent volume, "The Grizzly Bear: the Narrative of a Hunter-Naturalist,"† in interest and originality. Mr. Wright tells the story of how a quaint old book on bear hunting in California turned his thoughts as a child to this form of sport, how he was

* *Vancouver's Discovery of Puget Sound.* By EDMOND S. MEANY. The Macmillan Company, publishers.

† *The Grizzly Bear.* By WILLIAM H. WRIGHT. Charles Scribner's Sons. Price, \$1.50.

at last able to gratify his life-long ambition, and how, after many years of hunting he became "less enthralled of killing" and took to hunting his fast-vanishing quarry with a camera, in order that he might become better acquainted with its habits. The more adventurous hunt episodes will hold many readers, but probably the most original and humorous chapters are those devoted to the photographic expeditions, whose results, as exemplified in the illustrations, are of extraordinary interest and value. The third part of the book is more scientific in tone. It deals with the distribution, character, and habits of the grizzly, and is the result of long study and close observation. The volume certainly deserves a place in the front ranks of books of its kind.

M. R. P.

"CAMP-FIRES ON
DESERT AND LAVA."

"Camp-Fires on Desert and Lava,"* by

William T. Hornaday, is a lively record of a month's trip through Southwest Arizona and across the border to Mexico. To the valuable chapters of the fauna, flora, and geological history of this hitherto unknown region, the author adds a volume of incidents from camp and trail and introduces us to a number of persons we are not likely to forget. The chapter on the Sonoyta Oasis, the solitary settlement so far removed from the turmoil of civilization that a modern disease like "nervous prostration" was as impossible as happiness to an American countess," well characterizes the author's powers of observation and narration. His style is colloquial as befits his subject, but betrays the practiced hand of an experienced writer. To this he adds the further charm of humor and a happy use of epigram: "Don't visit any desert under the handicap of Indian 'guides'; they are enough to depress the spirits of a barometer! . . . After a month spent in the deserts, you will either love them or loath them. Like marriage—take them for better or worse. . . . I'm fond of dogs—in their proper place; and about nine cases out of every eight a hunter's camp is no place for them." The exploration of numerous extinct craters and the hunt for the Rocky Mountain big horn sheep give a variety of adventure that, together with the delightful narrative, keep the reader's interest on the *qui vive* throughout the tale. To fill the measures of his adventures the first ascent of Mount Pinacate is the culminating incident of the trip. The volume is beautifully illustrated.

H. M. LE C.

* *Camp-Fires on Desert and Lava*. By WILLIAM T. HORNADAY. Charles Scribner's Sons. \$3.00.

"LIFE AND LETTERS
OF JOSIAH DWIGHT
WHITNEY."

Of special interest to Californians, and above all to lovers of the Sierra, is the "Life and Letters of Professor J. D. Whitney,"* to whose advanced and scientific methods we owe not only the fine work comprised in the publication of the "California Geological Survey," but also the inspiration for the United States Geological Survey, whose first Director, Clarence King, in reality carried out for the nation what Whitney had begun for our State. The odds against which Whitney worked in convincing an ignorant public and a corrupt legislature of the necessity and practical value of his work must be read in his own words to be appreciated. The letters dealing with his home, family, and private affairs reveal a man of original mind and habit, tenacious in carrying out his ideals of conduct at whatever cost, in material benefit to himself and to others. This sterner side of his character is offset by his tender love of home and family and by his æsthetic talent as a musician and lover of the arts.

'Tis opportune, indeed, that we of the younger generation become acquainted with the arduous but intensely romantic adventures of the first explorers of the unknown Sierra, and most fitting that the name of the forceful originator of these explorations should crown the proud summit of Mt. Whitney.

H. M. LE C.

EDITOR'S NOTE.—The death of Maria Whitney, a sister of Professor J. D. Whitney, and a devoted member of the Sierra Club, has just come to our notice. It was due to her that the "Life and Letters" of her brother has been published.

* *Life and Letters of Josiah Dwight Whitney*. Edited by Edwin Tenney Brewster. Houghton, Mifflin Co., Riverside Press, Cambridge, Mass.

¶ This publication is from the
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68 Fremont St., San Francisco.

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